

تم تحميل هذا الملف من موقع المناهج الإماراتية



تجميعة الأسئلة المقالية والموضوعية وفق الهيكل الوزاري

موقع المناهج ← المناهج الإماراتية ← الصف الثاني عشر ← رياضيات ← الفصل الثاني ← ملفات متنوعة ← الملف

تاريخ إضافة الملف على موقع المناهج: 16:51:13 2025-02-14

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منهج انجليزي | ملخصات وتقارير | مذكرات وبنوك | الامتحان النهائي للمدرس

المزيد من مادة
رياضيات:

إعداد: مصطفى عبد العزيز

التواصل الاجتماعي بحسب الصف الثاني عشر



الرياضيات



اللغة الانجليزية



اللغة العربية



التربية الاسلامية



المواد على تلغرام

صفحة المناهج
الإماراتية على
فيسبوك

المزيد من الملفات بحسب الصف الثاني عشر والمادة رياضيات في الفصل الثاني

نموذج ثامن اختبار الامسات القياسي

1

نموذج سابع اختبار الامسات القياسي

2

نموذج سادس اختبار الامسات القياسي

3

نموذج خامس اختبار الامسات القياسي

4

نموذج رابع اختبار الامسات القياسي

5

Part A: الأسئلة المقالية

1	Simplify expressions in exponential or radical form Write expressions with rational exponents in radical form and vice versa	Page - 180	31-47
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Simplify expressions in exponential or radical form

31. $\sqrt[3]{27b^{18}c^{12}}$

32. $-\sqrt{(2x + 1)^6}$

33. $\sqrt[4]{81(x + 4)^4}$

34. $\sqrt[3]{(4x - 7)^{24}}$

35. $\sqrt[3]{(y^3 + 5)^{18}}$

36. $\sqrt[4]{256(5x - 2)^{12}}$

37. $\sqrt{196c^6d^4}$

38. $\sqrt{-64y^8z^6}$

39. $\sqrt[3]{-27a^{15}b^9}$

40. $\sqrt[4]{-16x^{16}y^8}$

41. $a^{\frac{7}{4}} \cdot a^{\frac{5}{4}}$

42. $x^{\frac{2}{3}} \cdot x^{\frac{8}{3}}$

43. $(b^{\frac{3}{4}})^{\frac{1}{3}}$

44. $(y^{-\frac{3}{5}})^{-\frac{1}{4}}$

45. $d^{-\frac{5}{6}}$

46. $w^{-\frac{7}{8}}$

47. GEOMETRY The volume V of a regular octahedron with edge length ℓ is given by $V = \frac{\ell^3\sqrt{2}}{3}$. Write the volume in simplest form for octahedron with the given edge lengths.

a. $\sqrt{15}$ cm

b. $\sqrt{24}$ cm

c. $3\sqrt{8}$ cm

2	Solve radical equations	P207-208	13-20 & 31-42
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Solve each equation. Identify any extraneous solutions.

13. $\sqrt{x-15} = 3 - \sqrt{x}$

14. $(5q + 1)^{\frac{1}{4}} + 7 = 5$

15. $(3x + 7)^{\frac{1}{4}} - 3 = 1$

16. $(3y - 2)^{\frac{1}{5}} + 5 = 6$

17. $(4z - 1)^{\frac{1}{5}} - 1 = 2$

18. $\sqrt{x-10} = 1 - \sqrt{x}$

$$19. \sqrt[6]{y+2} + 9 = 14$$

$$20. (2x - 1)^{\frac{1}{4}} - 2 = 1$$

Solve each equation. Identify any extraneous solutions.

$$31. 6 + \sqrt{4x+8} = 9$$

$$32. \sqrt{7a-2} = \sqrt{a+3}$$

$$33. \sqrt{x-5} - \sqrt{x} = -2$$

$$34. \sqrt{b-6} + \sqrt{b} = 3$$

$$35. 2(x-10)^{\frac{1}{3}} + 4 = 0$$

$$36. 3(x+5)^{\frac{1}{3}} - 6 = 0$$

$$37. \frac{1}{7}(14a)^{\frac{1}{3}} = 1$$

$$38. \frac{1}{4}(32b)^{\frac{1}{3}} = 1$$

$$39. \sqrt{x-3} = 3-x$$

$$40. \sqrt{x-2} = 22-x$$

$$41. \sqrt{x+30} = x$$

$$42. \sqrt{x+22} = x+2$$

3	Find sums of geometric series	Page 243	Exmple 7
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Example 7 Find the Sum of a Geometric Series

DOMINOS Kateri wants to set up some dominos so she can knock over one, which knocks over two more, each of which knocks over two more, and so on. If she wants to make 6 rows of dominos, how many will she need in total?

The first row has one domino. So, $a_1 = 1$, $r = 2$, and $n = 6$.

$$S_n = \frac{a_1 - a_1 r^n}{1 - r}$$

Sum formula

$$S_n = \frac{1 - 1(2)^6}{1 - 2}$$

$a_1 = 1$, $r = 2$, and $n = 6$

$$S_n = \frac{-63}{-1}$$

Simplify the numerator and the denominator.

$$S_n = 63$$

Divide.

-

$$24. \frac{y^2 + 8y + 15}{y - 6} \cdot \frac{y^2 - 9y + 18}{y^2 - 9}$$

$$25. \frac{c^2 - 6c - 16}{c^2 - d^2} \div \frac{c^2 - 8c}{c + d}$$

$$26. \frac{x^2 + 9x + 20}{8x + 16} \cdot \frac{4x^2 + 16x + 16}{x^2 - 25}$$

$$27. \frac{3a^2 + 6a + 3}{a^2 - 3a - 10} \div \frac{12a^2 - 12}{a^2 - 4}$$

$$28. \frac{9 - x^2}{x^2 - 4x - 21} \cdot \left(\frac{2x^2 + 7x + 3}{2x^2 - 15x + 7} \right)^{-1}$$

$$29. \left(\frac{2x^2 + 2x - 12}{x^2 + 4x - 5} \right)^{-1} \cdot \frac{2x^3 - 8x}{x^2 - 2x - 35}$$

$$30. \left(\frac{3xy^3z}{2a^2bc^2} \right)^3 \cdot \frac{16a^4b^3c^5}{15x^7yz^3}$$

$$31. \frac{20x^2y^6z^{-2}}{3a^3c^2} \cdot \left(\frac{16x^3y^3}{9acz} \right)^{-1}$$

$$32. \frac{\frac{8x^2 - 10x - 3}{10x^2 + 35x - 20}}{\frac{2x^2 + x - 6}{4x^2 + 18x + 8}}$$

$$33. \frac{\frac{2x^2 + 7x - 30}{-6x^2 + 13x + 5}}{\frac{4x^2 + 12x - 72}{3x^2 - 11x - 4}}$$

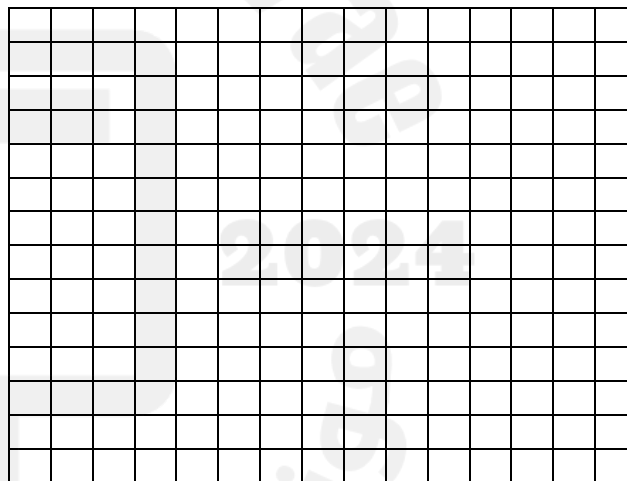
34. $\frac{x^2 + 4x - 32}{2x^2 + 9x - 5} \cdot \frac{3x^2 - 75}{3x^2 - 11x - 4} \div \frac{6x^2 - 18x - 60}{x^3 - 4x}$

35. $\frac{8x^2 + 10x - 3}{3x^2 - 12x - 36} \div \frac{2x^2 - 5x - 12}{3x^2 - 17x - 6} \cdot \frac{4x^2 + 3x - 1}{4x - 40x + 24}$

5	Graph rational functions with vertical and horizontal asymptotes	343; 337	1-4, 8-10; Example 1 & 3
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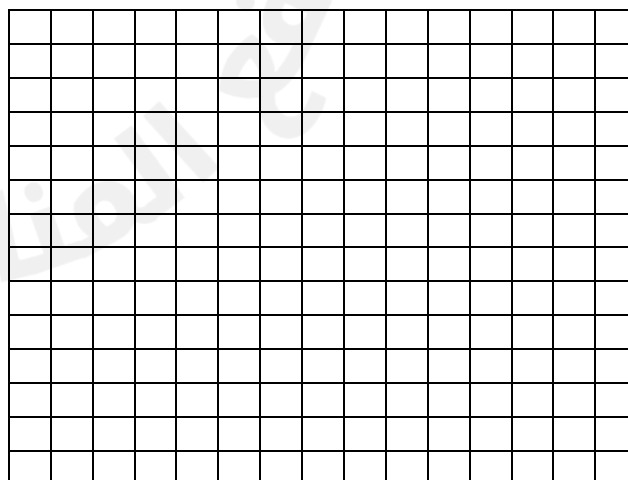
Graph $f(x) = \frac{x^3}{x + \frac{2}{3}}$

x						
$f(x)$						



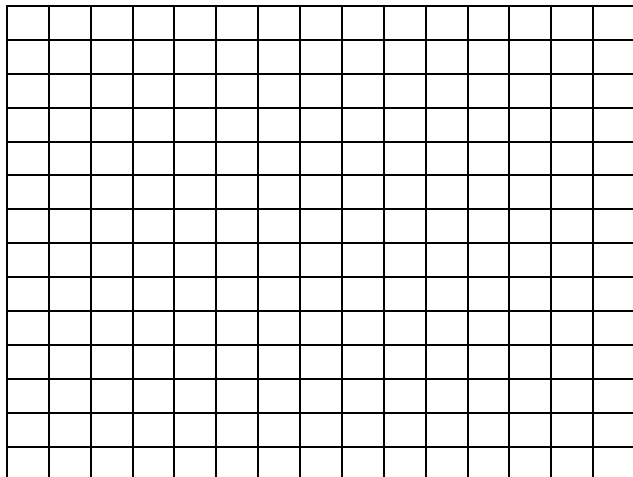
Consider $g(x) = \frac{x-2}{2x+2}$ and rational function $h(x)$ shown in the graph.

x						
$f(x)$						

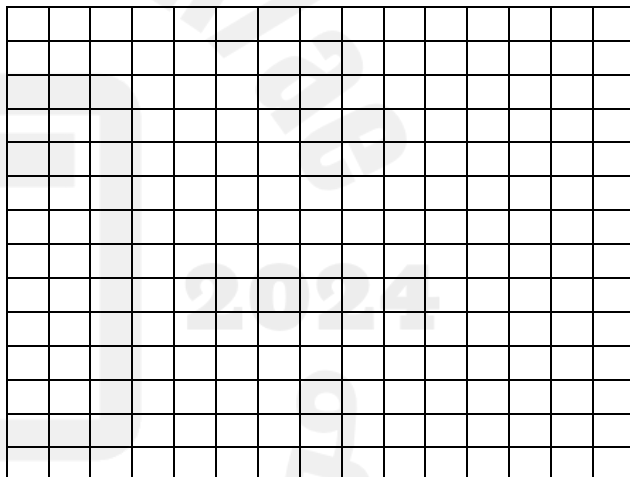


Graph each function.

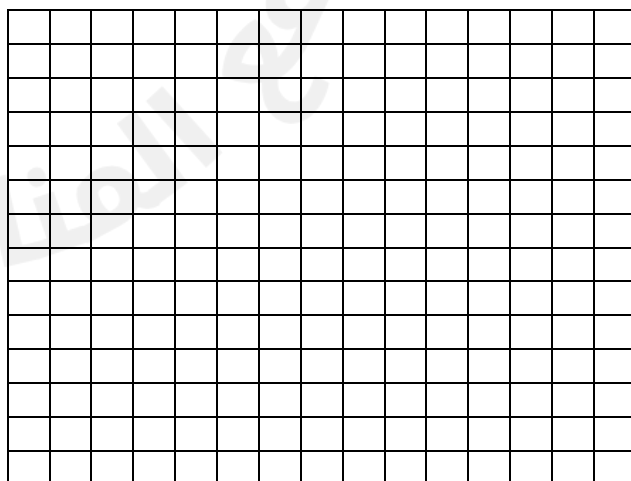
1. $f(x) = \frac{x^4}{6x + 12}$



2. $f(x) = \frac{x^3}{8x - 4}$



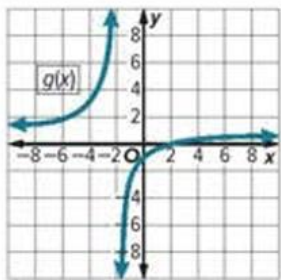
4. $f(x) = \frac{x^3 + 64}{16x - 24}$



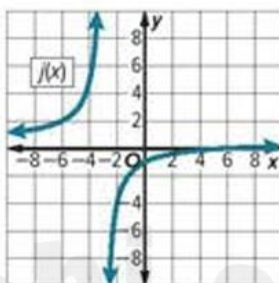
For Exercises 8-10, consider the given function and the function shown in the graph.

- Copy the graph. Graph the given function.
- Which function has the greater y-intercept?
- Compare the asymptotes of the two functions.

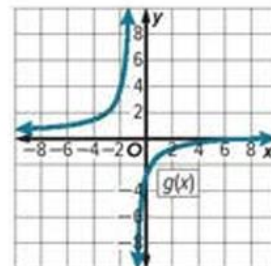
8. $f(x) = \frac{x-5}{3x+5}$ and $g(x)$ shown in the graph



9. $h(x) = \frac{x+1}{4x-4}$ and $j(x)$ shown in the graph



10. $f(x) = \frac{x-3}{2x+7}$ and $g(x)$ shown in the graph



Part B الأسئلة الموضوعية

6	Find the composition of functions	P 165	21-35
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If $f(x) = 3x$, $g(x) = x + 4$ and $h(x) = x^2 - 1$, find each value.

- $f [g (1)]$
- $g [h (0)]$
- $g [f (-1)]$
- $h [f (5)]$
- $g [h (-3)]$
- $h [f (5)]$
- $f [h (8)]$
- $[f \circ (h \circ g)] (1)$
- $[f \circ (g \circ h)] (-2)$
- $h [f (-6)]$
- $f [h (0)]$
- $f [h (-2)]$
- $[g \circ (f \circ h)] (-1)$

$$35. [h \circ (f \circ g)](3)$$

7	Find the inverse of a function or relation	P 171	5-14
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Find the inverse of each function. Then graph the function and its inverse. If necessary, restrict the domain of the inverse so that it is a function.

$$5. f(x) = x + 2$$

$$6. g(x) = 5x$$

$$7. f(x) = -2x + 1$$

$$8. h(x) = \frac{x-4}{3}$$

$$13. f(x) = 5x^2$$

$$14. h(x) = x^2 + 4$$

8	Write expressions with rational exponents in radical form and vice versa	P 179	1-12
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Simplify.

$$1. \pm\sqrt{121x^4y^{16}}$$

$$2. \pm\sqrt{225a^{16}b^{36}}$$

$$3. \pm\sqrt{49x^4}$$

$$4. -\sqrt{16c^4d^2}$$

5. $-\sqrt{81a^{16}b^{20}c^{12}}$

6. $-\sqrt{400x^{32}y^{40}}$

7. $\sqrt[4]{16(x-3)^{12}}$

8. $\sqrt[8]{x^{16}y^8}$

9. $\sqrt[4]{81(x-4)^4}$

10. $\sqrt[6]{x^{18}}$

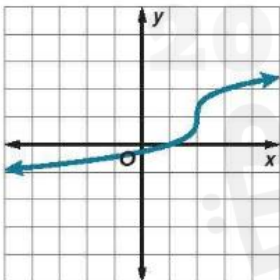
11. $\sqrt[4]{a^{12}}$

12. $\sqrt[3]{a^{12}}$

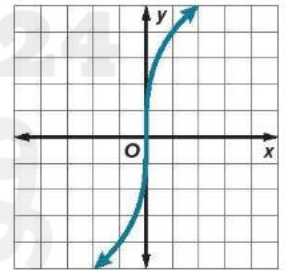
9	Graph and analyze radical functions	P 191	27-38
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Write a radical function for each graph

27.



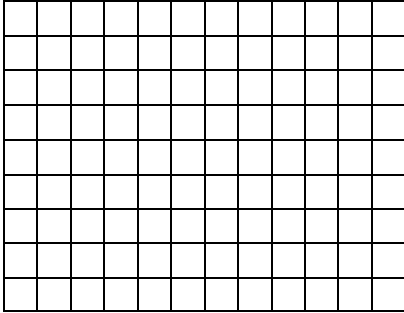
28.



Graph each function and state the domain and range. Then describe how it is related to the graph of the parent function.

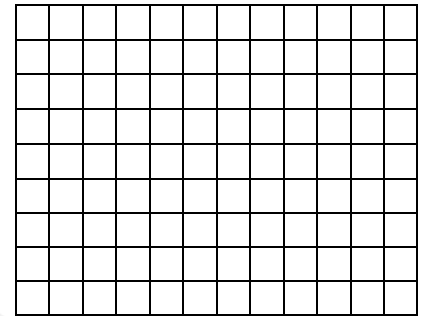
29. $f(x) = 2\sqrt{x-5} - 6$

x						
$f(x)$						



33. $f(x) = -\frac{1}{3}\sqrt[3]{x+2} - 3$

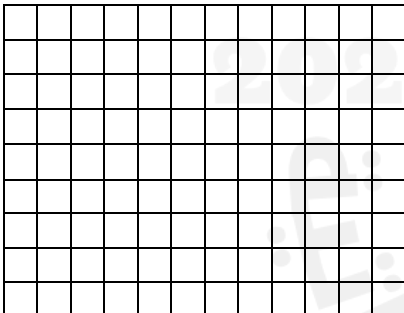
x						
$f(x)$						



Graph each inequality.

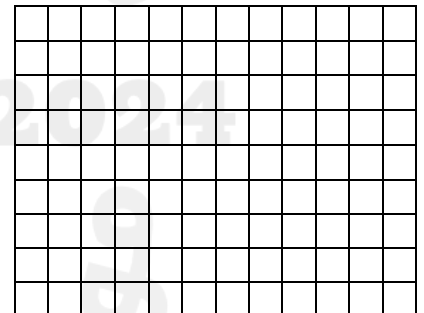
35. $y \leq 6 - 3\sqrt{x-4}$

x					
$f(x)$					

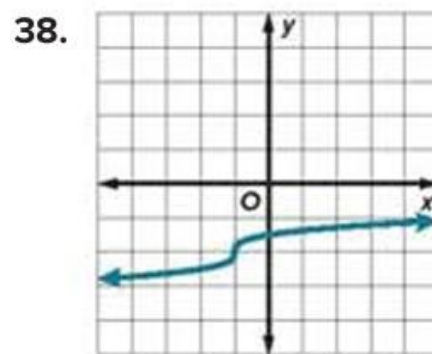
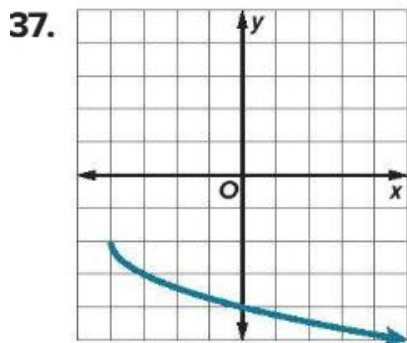


36. $y < \sqrt{4x-12} + 8$

x					
$f(x)$					



Write a radical function for each graph.



10	Add, subtract, multiply, and divide radical expressions	P 200	29-38
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Simplify.

29. $\frac{\sqrt{5a^5}}{\sqrt{b^{13}}}$

35. $\frac{9 - 2\sqrt{3}}{\sqrt{3} + 6}$

37. $\frac{3\sqrt{7}}{\sqrt{5} - 1}$

38. $\frac{7x}{3 - \sqrt{2}}$

11	Solve radical equations	P 207	1-20
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Solve each equation.

1. $5\sqrt{j} = 1$

2. $\sqrt{b - 5} = 4$

5. $\sqrt{k - 4} - 1 = 5$

7. $\sqrt[3]{3r - 6} = 3$

$$8. (2d + 3)^{\frac{1}{3}} = 2$$

$$12. 4(5n - 1)^{\frac{1}{3}} - 1 = 0$$

Solve each equation. Identify any extraneous solutions.

$$13. \sqrt{x - 15} = 3 - \sqrt{x}$$

$$19. \sqrt[6]{y + 2} + 9 = 14$$

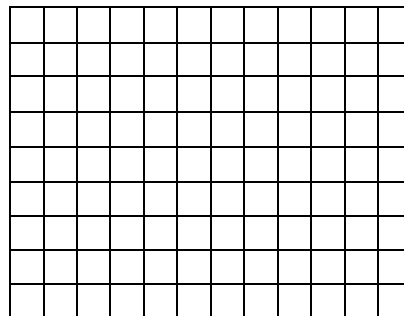
$$16. (3y - 2)^{\frac{1}{5}} + 5 = 6$$

$$20. (2x - 1)^{\frac{1}{4}} - 2 = 1$$

Graph each function. Find the domain, range, y-intercept, asymptote, and end behavior.

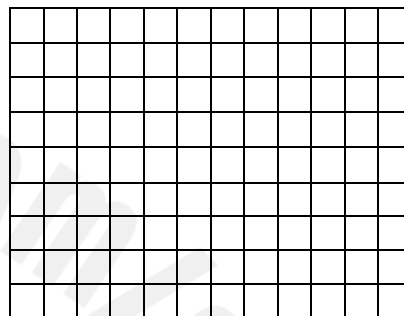
1. $f(x) = 3^x$

x						
$f(x)$						

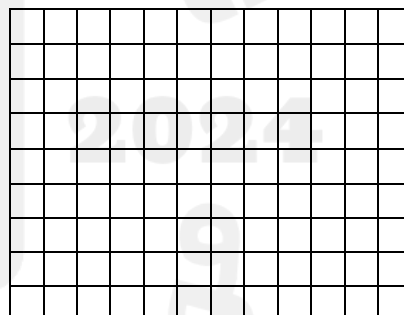


2. $f(x) = \left(\frac{5}{2}\right)^x$

x						
$f(x)$						

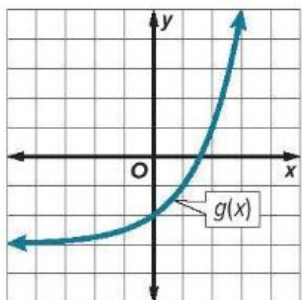


9. $f(x) = -0.4(3)^{x+2} + 4$

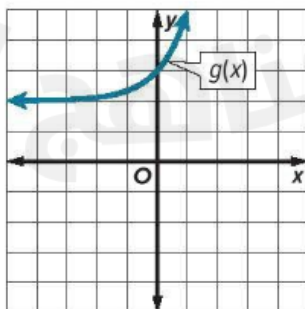


Identify the value of k and write a function $g(x)$ for each graph as it relates to $f(x)$

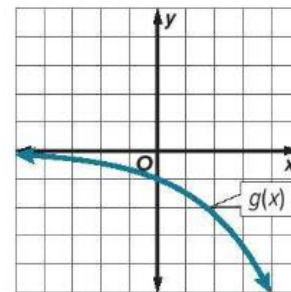
11. $f(x) = 2^x$; $g(x) = f(x) + k$



12. $f(x) = 3^x$; $g(x) = f(x) + k$



13. $f(x) = \left(\frac{3}{2}\right)^x$; $g(x) = k \cdot f(x)$



13	Solve exponential equations	P 229	1-6
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Solve each equation.

1. $25^{2x+3} = 25^{5x-9}$

2. $9^{8x-4} = 81^{3x+6}$

3. $4^{x-5} = 16^{2x-31}$

4. $4^{3x-3} = 8^{4x-4}$

5. $9^{-x+5} = 27^{6x-10}$

6. $125^{3x-4} = 25^{4x+2}$

14	Evaluate expressions involving the natural base and natural logarithm	P 237	13-15
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13. **COMPOUND INTEREST** Ryan invested \$5000 in an account that grows continuously at an annual rate of 2.5%.

a. Write the function that represents the situation, where A is the value of Ryan's investment after t years.

b. What will Ryan's investment will be worth after 7 years?

14. **SAVINGS** Jariah invested \$6500 in a savings account that grows continuously at an annual rate of 3.25%.

a. Write the function that represents the situation, where A is the value of Jariah's investment after t years.

b. What will Jariah's investment will be worth after 18 years?

15. **INVESTMENTS** Marcella invested \$12,750 in a company. Her investment has been growing continuously at an annual rate of 5.5%.

a. Write the function that represents the situation, where A is the value of Marcella's investment after t years.

b. What will Marcella's investment will be worth after 9 years?

15	Simplify rational expressions	P315	1-10
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Simplify each expression, and state when the original expression is undefined.

1.
$$\frac{x(x-3)(x+6)}{x^2+x-12}$$

2.
$$\frac{y^2(y^2+3y+2)}{2y(y-4)(y+2)}$$

3.
$$\frac{(x^2-9)(x^2-z^2)}{4(x+z)(x-3)}$$

5.
$$\frac{x^2(x+2)(x-4)}{6x(x^2+x-20)}$$

4.
$$\frac{(x^2-16x+64)(x+2)}{(x^2-64)(x^2-6x-16)}$$

6.
$$\frac{3y(y-8)(y^2+2y-24)}{15y^2(y^2-12y+32)}$$

Simplify each expression.

7. $\frac{x^2 - 5x - 14}{28 + 3x - x^2}$

10. $\frac{16 - c^2}{c^2 + c - 20}$

16	Simplify complex algebraic fractions including rational expressions	P323	16-19
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Simplify each expression.

16. $\frac{\frac{2}{x-3} + \frac{3x}{x^2-9}}{\frac{3}{x+3} - \frac{4x}{x^2-9}}$

17. $\frac{\frac{4}{x+5} + \frac{9}{x-6}}{\frac{5}{x-6} - \frac{8}{x+5}}$

18. $\frac{\frac{5}{x+6} - \frac{2x}{2x-1}}{\frac{x}{2x-1} + \frac{4}{x+6}}$

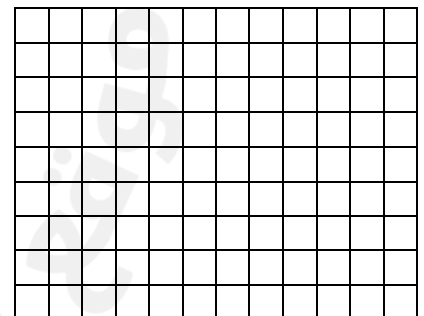
19. $\frac{\frac{8}{x-9} - \frac{x}{3x+2}}{\frac{3}{3x+2} + \frac{4x}{x-9}}$

17	Determine properties of reciprocal functions	P335	31-40
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Graph each function. State the domain and range and identify the asymptotes

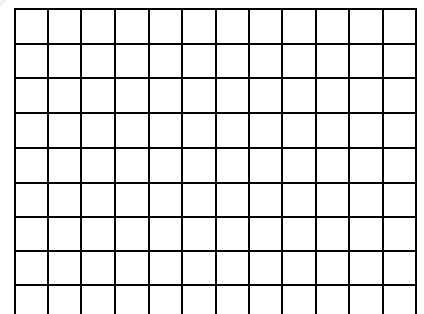
31. $f(x) = \frac{3}{2x-4}$

x				2			
$f(x)$				undefined			



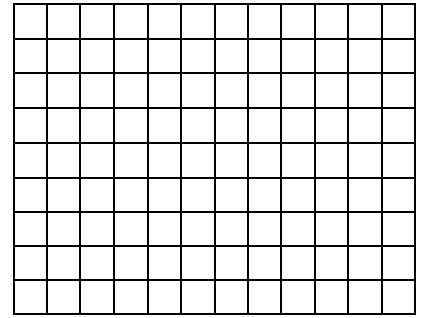
38. $f(x) = \frac{2}{x-4} + 3$

x				4			
$f(x)$				undefined			



$$40. f(x) = \frac{-6}{x-7} - 8$$

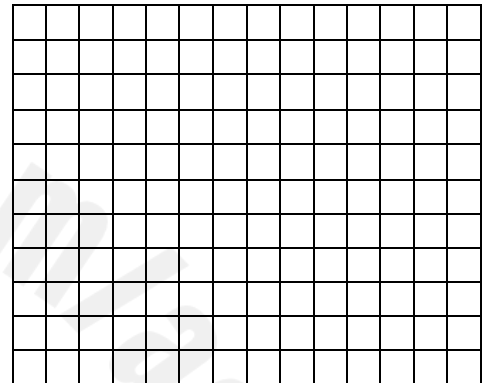
x			7			
$f(x)$			undefined			



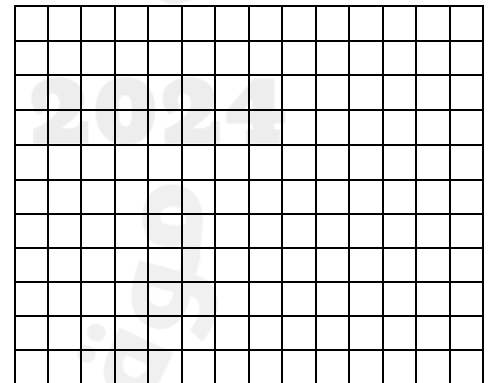
18	Graph rational functions with oblique asymptotes and point discontinuity	P 344	11-16
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Find the zeros and asymptotes of each function. Then graph each function.

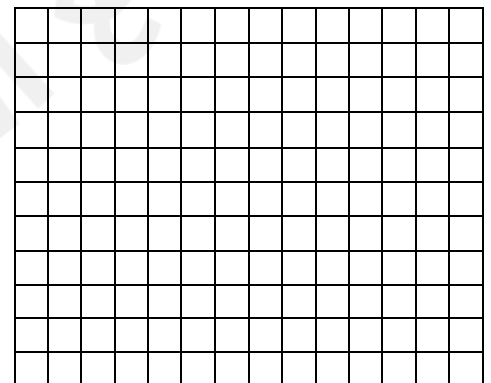
$$11. f(x) = \frac{(x-4)^2}{x+2}$$



$$15. f(x) = \frac{3x^2 + 8}{2x - 1}$$



$$16. f(x) = \frac{2x^2 + 5}{3x + 4}$$



19. Suppose a varies directly as b , and a varies inversely as c . Find b when $a = 5$ and $c = -4$, if $b = 12$ when $c = 3$ and $a = 8$.

20. Suppose x varies directly as y , and x varies inversely as z . Find z when $x = 10$ and $y = -7$, if $z = 20$ when $x = 6$ and $y = 14$.

21. Suppose a varies directly as b , and a varies inversely as c . Find b when $a = 2.5$ and $c = 18$, if $b = 6$ when $c = 4$ and $a = 96$.

22. Suppose x varies directly as y , and x varies inversely as z . Find z when $x = 32$ and $y = 9$, if $z = 16$ when $x = 12$ and $y = 4$.

Solve each equation. Check your solutions.

$$1. \frac{2x+3}{x+1} = \frac{3}{2}$$

$$2. \frac{-12}{y} = y - 7$$

$$3. \frac{9}{x-7} - \frac{7}{x-6} = \frac{13}{x^2-13x+42}$$

$$4. \frac{13}{y+3} - \frac{12}{y+4} = \frac{18}{y^2+7y+12}$$

$$5. \frac{14}{x-2} - \frac{18}{x+1} = \frac{22}{x^2-x-2}$$

$$7. \frac{x}{2x-1} + \frac{3}{x+4} = \frac{21}{2x^2+7x-4}$$

$$12. \frac{8}{t^2-9} + \frac{4}{t+3} = 1$$

$$11. \frac{2f}{f^2-4} + \frac{1}{f-2} = \frac{2}{f+2}$$