تجميعة أسئلة مراجعة وفق الهيكل الوزاري منهج ريفيل

موقع المناهج ⇦ المناهج الإماراتية ⇦ الصف الحادي عشر العام ⇦ رياضيات ⇦ الفصل الثاني ⇦ ملفات متنوعة ⇦ الملف

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المزيد من مادة رياضيات:	ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

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

1	تجميعة أسئلة مراجعة وفق الهيكل الوزاري منهج ريفيل
2	تجميعة الأسئلة المقالية والموضوعية وفق الهيكل الوزاري
3	حل تجميعة أسئلة وفق الهيكل الوزاري منهج بريدج
4	تجميعة أسئلة وفق الهيكل الوزاري منهج بريدج
5	تجميعة أسئلة وفق الهيكل الوزاري منهج بريدج

وزارة التربية والتعليم
مدرسة البدع للتعليم الأساسي والثانوي
الصف / الحادي عشر العام

EOT (11-General)
هيكل الرياضيات للصف الحادي عشر العام
(Reveal)
الفصل الدراسي الثاني
2024 – 2025م

إعداد الأستاذ /
محمد عبدالحميد الطحاوي

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

Simplify.

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

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

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 with extraneous solutions	13-20	207

Examples 3 and 4

Solve each equation. Identify any extraneous solutions.

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

14. $(5q+1)^{\frac{1}{3}} + 7 = 5$

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

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

17. $(4z-1)^{\frac{1}{3}} - 1 = 2$

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

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

20. $(2x-1)^{\frac{1}{3}} - 2 = 1$

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.

4	Simplify rational expressions by multiplying and dividing	24-35	316

Simplify each expression.

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

5	Graph rational functions with vertical and horizontal asymptotes	1-4; 8-10; Example 1; Example 3	343; 337-338-339-340

Example 1

Graph each function.

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

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

3. $f(x) = \dfrac{x^4 - 16}{x^2 - 1}$

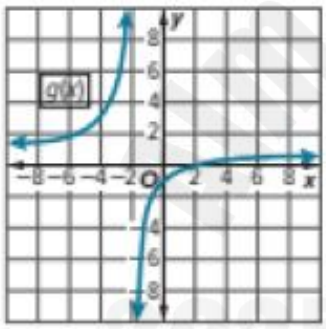
4. $f(x) = \dfrac{x^3 + 64}{16x - 24}$

Example 3

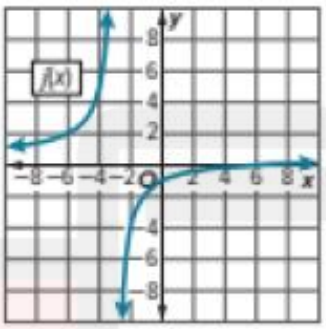
For Exercises 8-10, consider the given function and the function shown in the graph.

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

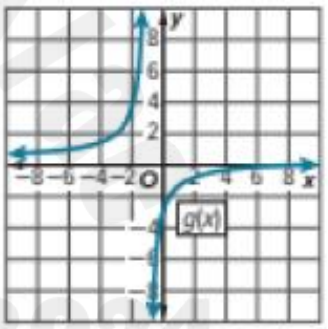
8. $f(x) = \dfrac{x - 5}{3x + 5}$ and $g(x)$ shown in the graph



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



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



Example 1 Graph with No Horizontal Asymptotes

Graph $f(x) = \frac{x^3}{x + \frac{2}{3}}$.

Step 1 Find the zeros.

Set $a(x) = 0$.

$$x^3 = 0$$

$$x = 0$$

There is a zero at $x = 0$.

Step 2 Find the asymptotes.

Find the vertical asymptote. Set $b(x) = 0$.

$$x + \frac{2}{3} = 0$$

$$x = -\frac{2}{3}$$

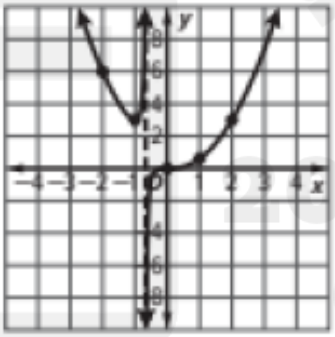
There is a vertical asymptote at $x = -\frac{2}{3}$.

Because the degree of the numerator is greater than the degree of the denominator, there is no horizontal asymptote.

Step 3 Draw the graph.

Graph the asymptote. Then make a table of values, and graph.

x	$f(x)$
−2	6
−1	3
0	0
1	0.6
2	3



Check

Consider $g(x) = \frac{(0.5x - 1)^3}{x}$.

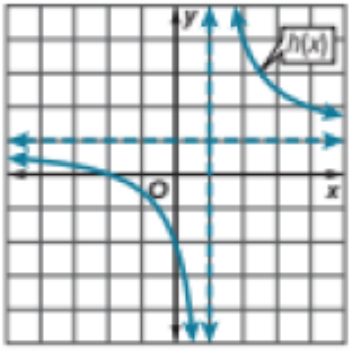
Part A There is a zero at $x =$ ___?___.

Part B There is a vertical asymptote at $x =$ ___?___.

Part C Graph the function.

Example 3 Compare Rational Functions

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



Part A Graph $g(x)$.

Step 1 Find the zeros.

$x - 2 = 0$ Set $a(x) = 0$.

$x = 2$ Add 2 to each side.

There is a zero at $x = 2$.

Step 2 Find the asymptotes.

Find the vertical asymptote.

$2x + 2 = 0$ Set $b(x) = 0$.

$2x = -2$ Subtract 2 from each side.

$x = -1$ Divide each side by 2.

There is a vertical asymptote at $x = -1$.

Because the degree of the numerator equals the degree of the denominator, the horizontal asymptote is the line $y = \frac{\text{leading coefficient of } a(x)}{\text{leading coefficient of } b(x)}$ or $y = \frac{1}{2}$.

Step 3 Draw the graph.

Draw the asymptotes. Then make a table of values, and graph the ordered pairs.

6	Find the composition of functions	21-35	165

If $f(x) = 3x$, $g(x) = x + 4$, and $h(x) = x^2 - 1$, find each value.

21. $f[g(1)]$

22. $g[h(0)]$

23. $g[f(-1)]$

24. $h[f(5)]$

25. $g[h(-3)]$

26. $h[f(10)]$

27. $f[h(8)]$

28. $[f \circ (h \circ g)](1)$

29. $[f \circ (g \circ h)](-2)$

30. $h[f(-6)]$

31. $f[h(0)]$

32. $f[g(7)]$

33. $f[h(-2)]$

34. $[g \circ (f \circ h)](-1)$

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

7	Find the inverse of a function or relation	5-14	171

Examples 2 and 3

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

9. $f(x) = -\frac{5}{3}x - 8$

10. $g(x) = x + 4$

11. $f(x) = 4x$

12. $f(x) = -8x + 9$

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

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

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

Examples 1 and 2

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	27-38	191

Mixed Exercises

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

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

30. $f(x) = \frac{3}{4}\sqrt{x+12} + 3$

31. $f(x) = -\frac{1}{5}\sqrt{x-1} - 4$

32. $f(x) = -3\sqrt{x+7} + 9$

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

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

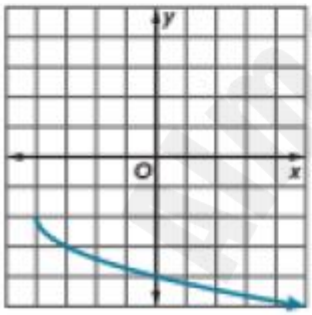
Graph each inequality.

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

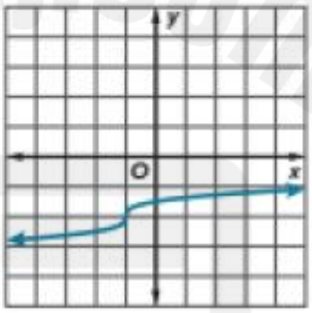
36. $y < \sqrt{4x-12} + 8$

Write a radical function for each graph.

37.



38.



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

Examples 6 and 7

Simplify.

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

30. $\frac{\sqrt{7x}}{\sqrt{10x^3}}$

31. $\frac{\sqrt[3]{6x^2}}{\sqrt[3]{5y}}$

32. $\sqrt[4]{\frac{7x^3}{4b^2}}$

33. $\frac{6}{\sqrt{3}-\sqrt{2}}$

34. $\frac{\sqrt{2}}{\sqrt{5}-\sqrt{3}}$

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

36. $\frac{2\sqrt{2}+2\sqrt{5}}{\sqrt{5}+\sqrt{2}}$

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

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

Example 1

Solve each equation.

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

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

3. $\sqrt{3n+1} = 5$

4. $2 + \sqrt{3p+7} = 6$

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

6. $5 = \sqrt{2g-7}$

Example 2

Solve each equation.

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

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

9. $(t-3)^{\frac{1}{3}} = 2$

10. $4 - (1-7u)^{\frac{1}{3}} = 0$

11. $\sqrt[3]{2v-7} = -2$

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

Examples 3 and 4

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. $\sqrt[5]{y+2} + 9 = 14$

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

Example 1

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

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

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

3. $f(x) = 1.5^x$

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

Example 2

Graph each function.

5. $f(x) = 2(3)^x$

6. $f(x) = -2(4)^x$

7. $f(x) = 4^{x+1} - 5$

8. $f(x) = 3^{2x} + 1$

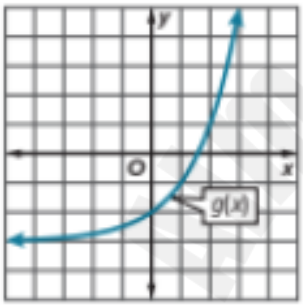
9. $f(x) = -0.4(3)^{x+2} + 4$

10. $f(x) = 1.5(2)^x + 6$

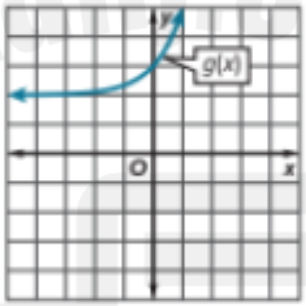
Example 3

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

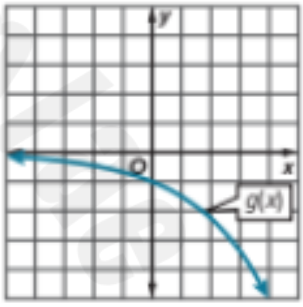
11. $f(x) = 2^x$; $g(x) = f(x) + k$



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	1-6	229

Example 1

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	13-15	237

Example 3

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?

16	Simplify complex algebraic fractions including rational expressions	16-19	323

Examples 4 and 5

Simplify each expression.

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

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

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

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

17	Determine properties of reciprocal functions	31-40	335

Graph each function. State the domain and range, and identify the asymptotes.

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

32. $f(x)=\dfrac{5}{3x}$

33. $f(x)=\dfrac{2}{4x+1}$

34. $f(x)=\dfrac{1}{2x+3}$

35. $f(x)=\dfrac{-3}{x+7}-1$

36. $f(x)=\dfrac{-4}{x+2}-5$

37. $f(x)=\dfrac{6}{x-1}+2$

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

39. $f(x)=\dfrac{-7}{x-8}-9$

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

18	Graph rational functions with oblique asymptotes and point discontinuity	11-16	344

Example 4

Find the zeros and asymptotes of each function. Then graph each function.

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

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

13. $f(x) = \frac{6x^2+4x+2}{x+2}$

14. $f(x) = \frac{2x^2+7x}{x-2}$

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

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

19	Recognize and solve direct and joint variation problems	19-22	351

Example 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 $y = 4$.

20	Solve rational equations	1-12	361

Example 1

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

6. $\frac{2}{a+2}+\frac{10}{a+5}=\frac{36}{a^2+7a+10}$

Example 2

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

8. $\frac{2}{y-5}+\frac{y-1}{2y+1}=\frac{2}{2y^2-9y-5}$

9. $\frac{x-8}{2x+2}+\frac{x}{2x+2}=\frac{2x-3}{x+1}$

10. $\frac{12p+19}{p^2+7p+12}-\frac{3}{p+3}=\frac{5}{p+4}$

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

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