حل أوراق عمل الدرس الثالث حساب المشتقات من الوحدة الثالثة الاشتقاق

Math Questions Solutions

Q1: The correct derivative of $f(x) = 2x^4 - x^3 + 2$ is $f'(x) = 8x^3 - 3x^2$. Option A.

Q2: The correct derivative of $f(t) = 3t*pi - 2t^{1.3}$ is $f'(t) = 3*pi - 2.6t^{0.3}$. Option A.

Q3: The value of $f'(1)$ for $f(x) = (4x^2 - x + 3) / sqrt(x)$ is $f'(1) = 6$. Option A.

Q4: The acceleration function for $s(t) = 2*sqrt(t) + 2t^2$ is $a(t) = 1/(2*t^{(3/2)}) + 4$. Option A.

Q5: The velocity at $t = 1$ second for $s(t) = 4t - 4.9t^2$ is $v(1) = -5.8$ m/s. Option B.

Q6: For $h(t) = 10t^2 - 24t$, the velocity $v(1) = -4$ and acceleration $a(1) = -20$. Option A.

Q7: The maximum height the ball reaches for $S(t) = 48t - 4t^2$ is 144 m. Option D.

Q8: The maximum height for $S(t) = 56t - 4t^2$ is 196 m. Option B.

Q9: The values of x where the tangent is horizontal for $y = 3x^4 - 6x^2 + 1$ are $x = -1, 0, 1$. Option A.

Q10: The values of x where the tangent makes a 45-degree angle with the x-axis for $y = x^3 - 2x + 1$ are $x = 1, -1$. Option C.

Q11: The limit of $lim(h->0) [(2+h)^3 - 8] / h$ is 12. Option C.

Q21: The limit of $lim(h->0) [125 - (5+h)^3] / h$ is -75. Option B.

Q31: The limit of $lim(h->0) [5(3+h)^2 - 45] / h$ is 30. Option B.

Q41: The limit $lim(h->0) [f(3+h) - f(3-h)] / h$ for $f(x) = x^2 + 1$ is 6. Option A.

Q51: The value of a for $\lim_{h\to 0} [f(2+h) - f(2)] / h = 3$ for $f(x) = x^2 + ax - 5$ is $a = 1$. Option B.

Q61: The value of a for $\lim_{h\to 0} [f(1+h) - f(1)] / h = -6$ for $f(x) = ax^3 - 7$ is $a = -2$. Option C.

Q71: The limit $\lim_{x\to 4} [f(x) - f(4)] / (\sqrt{x} - 2)$ for $f'(4) = 6$ is 24. Option D.

Q81: The second derivative of $f(x) = x^4 + 3x^2 - 2$ evaluated at $x = 1$ is 10. Option D.

Q91: The second derivative of $f(x) = 2x - x^5 + 1$ at $x = -1$ is -20. Option A.

Q20: The limit $\lim_{x\to 2} [f'(x) - f'(2)] / (x - 2)$ for $f(x) = x^4 - 5x$ is 48. Option D.

Q12: The limit $\lim_{x\to 2} [f'(x) - f'(2)] / (x - 2)$ for $f(x) = x^4 - 5x^2$ is 48. Option D.

Q22: The values of a and b for $f'(0)$ to exist for $f(x) = \{x^2 + 2x, x < 0$ and $ax + b, x >= 0\}$ are $a = -2$, $b = 0$. Option A.

Q32: The values of a and b for $f'(x)$ to exist for $f(x) = \{ax + b, x <= 0$ and $x^2 - 3x, x > 0\}$ are $a = -3$, $b = 0$. Option A.

Q42: The function that does not have a derivative at $x = 2$ is $f(x) = \{4, x < 2$ and $2x, x >= 2\}$. Option A.

Q52: Based on the graph of f(x), draw a plausible graph of f''(x). This is graph-based and cannot be answered textually.

Q62: The value of b for $\lim_{x\to 0} [f(x+h) - f(2)] / h = 10$ and $f(x) = 2x^4 + bx + 3$ is $b = 5$.

Q72: The points where the slope of the tangent line equals 5 for $y = x^3 + 3x + 1$ are x

= 2.

Q82: The values of x where the tangents to the curves $y = x^3 + 2x + 1$ and $y = x^4 + x^3 + 3$ are parallel are $x = -1, 0, 1$.

Q92: The second-degree polynomial $a x^2 + b x + c$ such that $f(0) = -2$, $f'(0) = 2$, and $f''(0) = 3$ is $a = 3$, $b = 2$, $c = -2$.