PRINTABLE VERSION

Quiz 7

Question 1

Find the derivative of $f(x) = 5x^2 + 2x + 1$.

a) $\bigcirc$ $f'(x) = 2x - 2$

b) $\bigcirc$ $f'(x) = 5x + 2$

c) $\bigcirc$ $f'(x) = 10x + 2 + \dfrac{1}{x}$

d) $\bigcirc$ $f'(x) = 10x + 2$

e) $\bigcirc$ $f'(x) = 10x + 3$

Question 2

Find the derivative of $f(x) = \dfrac{7}{x^2} - 7x^3$.

a) $\bigcirc$ $f'(x) = \dfrac{14}{x^3} - 21x^2$

b) $\bigcirc$ $f'(x) = -21x^2 + 14x$

c) $\bigcirc$ $f'(x) = -\dfrac{14}{x^3} - 21x^2$

d) $\bigcirc$ $f'(x) = -\dfrac{7}{x^3} + 21x^2$

e) $\bigcirc$ $f'(x) = \dfrac{7}{x^3} - 21x^2$

Question 3

Find the slope of the line that is tangent to the graph of $f(x) = x^6 + 5x^3 - x^2 + 1$ at $x = 1$.

a) $\bigcirc$ 23

b) $\bigcirc$ 19

c) $\bigcirc$ 21

d) $\bigcirc$ 16

e) $\bigcirc$ 17

Question 4

Consider the function $f(x) = x^3 + 4x^2 + 3$. Find the equation of the normal line at the point (1, 8).

a) $\bigcirc$ $y = -11x + 19$

b) $\bigcirc$ $y = \dfrac{-x}{11} + \dfrac{89}{11}$

c) ○ $y = \dfrac{x}{11} + \dfrac{87}{11}$

d) ○ $y = \dfrac{-x}{11} - \dfrac{87}{11}$

e) ○ $y = 11\,x - 3$

Question 5

Consider the function $f(x) = x^4 - x^2 + 4$. Find the points where the tangent line is horizontal.

a) ○ $\left(\dfrac{1}{2}, \dfrac{61}{16}\right)\left(-\dfrac{1}{2}, \dfrac{61}{16}\right)$

b) ○ $(-2, 16)$

c) ○ $(-2, 16)(2, 16)$

d) ○ $(0, 4)\left(-\dfrac{\sqrt{2}}{2}, \dfrac{15}{4}\right)\left(\dfrac{\sqrt{2}}{2}, \dfrac{15}{4}\right)$

e) ○ $(0, 0)\left(-\dfrac{\sqrt{2}}{2}, 0\right)\left(\dfrac{\sqrt{2}}{2}, 0\right)$

Question 6

Given the function $f(x) = \dfrac{1}{3}x^3 - 2x^2 + 7x + 1$, find the points where the tangent line has slope 4.

a) ○ $(-3, -47), \left(1, \dfrac{19}{3}\right)$

b) ○ $(3, 13), \left(1, \dfrac{19}{3}\right)$

c) ○ $(-3, -47), \left(-1, -\dfrac{25}{3}\right)$

d) ○ $(0, 1), \left(-1, -\dfrac{25}{3}\right)$

e) ○ $(0, 1), (3, 13)$

Question 7

For $f(x) = 2\,\cos(x)$, find $f'\left(\dfrac{\pi}{2}\right)$.

a) ○ -4

b) ○ -2

c) ○ -1

d) ○ 0

e) ○ 2

Question 8

For $g(x) = x + 5\sin(x) + \cot(x)$, find $g'\left(\dfrac{\pi}{4}\right)$.

a) ○ $2 + \sqrt{3}$

b) ○ $\dfrac{5\sqrt{2}}{2} - 1$

c) ○ $2 - \sqrt{3}$

d) ○ $\dfrac{5\sqrt{2}}{2} - 1 + \dfrac{\pi}{4}$

e) ○ $\dfrac{\sqrt{3}}{2} + \dfrac{\pi}{4}$

Question 9

Determine the number(s), x, between 0 and 2π where the line tangent to the function $f(x) = 6\sin(x) + 6\cos(x)$ is horizontal.

a) ○ $x = \left\{\dfrac{\pi}{8}, \dfrac{5\pi}{4}\right\}$

b) ○ $x = \left\{\dfrac{\pi}{4}, \dfrac{5\pi}{4}\right\}$

c) ○ $x = \left\{\dfrac{\pi}{4}, \dfrac{5\pi}{2}\right\}$

d) ○ $x = \{0, 1\}$

e) ○ $x = \left\{\dfrac{\pi}{2}, \dfrac{3\pi}{2}\right\}$

Question 10

Find the third derivative of the function $f(x) = 3x^3 - \dfrac{8}{x^3}$.

a) ○ $f'''(x) = 18x + \dfrac{96}{x^5}$

b) ○ $f'''(x) = 9x^2 + \dfrac{24}{x^4}$

c) ○ $f'''(x) = 18 + \dfrac{480}{x^6}$

d) ○ $f'''(x) = 18x - \dfrac{96}{x^5}$

e) ○ $f'''(x) = 18 - \dfrac{480}{x^6}$