Name_____

Calculus Practice: Using Differentiation to Find a Tangent 1a

For each problem, find the equation of the line tangent to the function at the given point. Your answer should be in slope-intercept form.

1) $y = -2x^2 - 16x - 34$ at $(-4, -2)$

  A) $y = -2$
  B) $y = -16x - 34$
  C) $y = -12x - 32$
  D) $y = -24x - 26$

2) $y = \dfrac{x^2}{2} + 3x + \dfrac{11}{2}$ at $\left(0, \dfrac{11}{2}\right)$

  A) $y = 7x - \dfrac{5}{2}$ B) $y = 6x + 1$

  C) $y = 5x + \dfrac{7}{2}$ D) $y = 3x + \dfrac{11}{2}$

3) $f(x) = x^2 - 4x$ at $(3, -3)$

  A) $y = 6x - 25$
  B) $y = 2x - 9$
  C) $y = -14x - 25$
  D) $y = -8x - 4$

4) $f(x) = 2x^2 + 4x - 1$ at $(-3, 5)$

  A) $y = 24x - 51$
  B) $y = -20x - 73$
  C) $y = 16x - 19$
  D) $y = -8x - 19$

5) $f(x) = -2x^2 + 1$ at $(1, -1)$

  A) $y = -8x + 9$
  B) $y = -12x + 19$
  C) $y = -4x + 3$
  D) $y = 4x + 3$

6) $f(x) = x^3 - 2x^2$ at $(-1, -3)$

  A) $y = 132x + 504$
  B) $y = 0$
  C) $y = 4x - 8$
  D) $y = 7x + 4$

7) $f(x) = x^3 + 8x^2 + 16x + 6$ at $(-1, -3)$

  A) $y = 35x - 4$ B) $y = 60x - 42$
  C) $y = 3x$ D) $y = -4x - 10$

8) $f(x) = x^3 - 4x^2 + 2$ at $(3, -7)$

  A) $y = -5x + 4$
  B) $y = 3x - 16$
  C) $y = 28x + 34$
  D) $y = 51x + 92$

9) $y = -x^3 + 2x^2$ at $(1, 1)$

  A) $y = -55x + 200$
  B) $y = x$
  C) $y = -84x + 360$
  D) $y = -7x - 4$

10) $f(x) = x^3 - 9x^2 + 24x - 23$ at $(2, -3)$

  A) $y = 144x + 249$
  B) $y = -3$
  C) $y = 9x - 48$
  D) $y = 240x + 733$

11) $y = -\dfrac{3}{x - 5}$ at $\left(0, \dfrac{3}{5}\right)$

  A) $y = \dfrac{1}{27}x + \dfrac{13}{27}$

  B) $y = \dfrac{3}{4}x - \dfrac{3}{4}$

  C) $y = \dfrac{3}{25}x + \dfrac{3}{5}$

  D) $y = \dfrac{1}{12}x + \dfrac{7}{12}$

12) $y = \dfrac{2}{x - 5}$ at $\left(-3, -\dfrac{1}{4}\right)$

  A) $y = -\dfrac{2}{25}x - \dfrac{2}{5}$

  B) $y = -\dfrac{1}{18}x - \dfrac{7}{18}$

  C) $y = -\dfrac{1}{32}x - \dfrac{11}{32}$

  D) $y = -\dfrac{1}{50}x - \dfrac{3}{10}$

-1-

13) $f(x) = \dfrac{x^2}{4x+8}$ at $\left(-5, -\dfrac{25}{12}\right)$

A) $y = \dfrac{5}{36}x - \dfrac{25}{18}$

B) $y = 0$

C) $y = \dfrac{2}{9}x - \dfrac{2}{9}$

D) $y = -\dfrac{3}{4}x - \dfrac{9}{2}$

14) $f(x) = -\dfrac{3}{x^2 - 1}$ at $\left(-3, -\dfrac{3}{8}\right)$

A) $y = -\dfrac{4}{3}x - \dfrac{11}{3}$

B) $y = \dfrac{5}{96}x - \dfrac{37}{96}$

C) $y = \dfrac{4}{3}x - \dfrac{11}{3}$

D) $y = -\dfrac{9}{32}x - \dfrac{39}{32}$

15) $f(x) = -\dfrac{1}{x-5}$ at $(4, 1)$

A) $y = \dfrac{1}{121}x + \dfrac{17}{121}$

B) $y = \dfrac{1}{25}x + \dfrac{1}{5}$

C) $y = x - 3$

D) $y = \dfrac{1}{64}x + \dfrac{11}{64}$

16) $y = (x-2)^{\frac{2}{3}}$ at $(3, 1)$

A) $y = \dfrac{2}{3}x - 1$

B) $y = \dfrac{1}{4}x - 2$

C) $y = -\dfrac{2\sqrt[3]{25}}{15}x + \dfrac{3\sqrt[3]{25}}{5}$

D) $y = \dfrac{1}{3}x + 1$

17) $f(x) = -(2x-6)^{\frac{2}{3}}$ at $(-1, -4)$

A) $y = \dfrac{1}{4}x + 3$

B) $y = \dfrac{2}{3}x - \dfrac{10}{3}$

C) $y = \dfrac{2\sqrt[3]{18}}{9}x - \dfrac{4\sqrt[3]{18}}{3}$

D) $y = \dfrac{1}{2}x - 3$

18) $f(x) = (2x-4)^{\frac{2}{3}}$ at $(-2, 4)$

A) $y = \dfrac{1}{2}x + 2$

B) $y = -\dfrac{2}{3}x + \dfrac{8}{3}$

C) $y = \dfrac{1}{5}x + 2$

D) $y = -\dfrac{2\sqrt[3]{36}}{9}x + \dfrac{7\sqrt[3]{36}}{9}$

19) $y = (-3x+6)^{\frac{1}{2}}$ at $(-1, 3)$

A) $y = \dfrac{1}{2}x + 3$

B) $y = -\dfrac{1}{2}x + \dfrac{5}{2}$

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A) $y = \dfrac{2\sqrt[3]{25}}{15}x + \dfrac{\sqrt[3]{25}}{5}$

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