

SATPREP

Assignment : Gradient of tangent

For each problem, find the derivative of the function at the given value.

1) $y = x^3 - 8x^2 + 20x - 15$ at $x = 3$

2) $y = (2x + 2)^{\frac{1}{2}}$ at $x = 1$

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

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

5) $y = \frac{2}{x^2 - 4}$ at $x = 0$

6) $y = \frac{2}{x - 2}$ at $x = 0$

For each problem, find the slope of the function at the given value.

7) $y = -\frac{x^2}{2x - 2}$ at $x = 0$

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

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

10) $y = -(2x - 4)^{\frac{1}{3}}$ at $x = -2$

11) $y = -(x + 2)^{\frac{2}{3}}$ at $x = 2$

12) $y = -\frac{x^2}{2x + 4}$ at $x = 1$

Answers to Gradient of tangent

$$1) \left. \frac{dy}{dx} \right|_{x=3} = -1$$

$$5) \left. \frac{dy}{dx} \right|_{x=0} = 0$$

$$9) -\frac{1}{3}$$

$$2) \left. \frac{dy}{dx} \right|_{x=1} = \frac{1}{2}$$

$$6) \left. \frac{dy}{dx} \right|_{x=0} = -\frac{1}{2}$$

$$10) -\frac{1}{6}$$

$$3) \left. \frac{dy}{dx} \right|_{x=1} = -\frac{1}{2}$$

$$7) 0$$

$$11) -\frac{\sqrt[3]{2}}{3}$$

$$4) \left. \frac{dy}{dx} \right|_{x=-1} = \frac{2\sqrt[3]{9}}{9}$$

$$8) -\frac{\sqrt[3]{2}}{3}$$

$$12) -\frac{5}{18}$$

