

Find the derivative of the function.

1) $y = x^{13}$

6) $y = \sqrt[3]{x^{-5}}$

2) $y = x^{\frac{3}{2}}$

7) $y = \sqrt[5]{\frac{1}{x^8}}$

3) $y = x^{2a}$

8) $y = 2x^a$

4) $u = t^2$

9) $y = \sqrt[q]{x^3}$

5) $y = \sqrt[3]{u}$

10) $y = \sqrt[n]{\frac{1}{x^m}}$

Answer Key

$$1) \frac{dy}{dx} = 13x^{12}$$

$$2) \frac{dy}{dx} = -\frac{3}{2}x^{-\frac{5}{2}}$$

$$3) \frac{dy}{dx} = 2ax^{(2a-1)}$$

$$4) \frac{du}{dt} = 2t$$

$$5) \frac{dz}{du} = \frac{1}{3}u^{-\frac{2}{3}}$$

$$6) \frac{dy}{dx} = -\frac{5}{3}x^{\frac{8}{5}}$$

$$7) \frac{du}{dx} = -\frac{8}{5}x^{-\frac{13}{5}}$$

$$8) \frac{dy}{dx} = 2ax^{a-1}$$

$$9) \frac{dy}{dx} = \frac{3}{q}x^{\frac{3-q}{q}}$$

$$10) \frac{dy}{dx} = -\frac{m}{n}x^{-\frac{m+n}{n}}$$