

3.4 The Chain Rule. 3.7 Elasticity of Demand.

Provide an appropriate response.

- 1) Find the composition $f[g(x)]$ if $f(u) = u^5$ and $g(x) = 2 - 3x^2$. 1) _____
 A) $(2 - 3x^2)^2$ B) $(10 - 15x^2)^5$ C) $(2 - 3x^2)^5$ D) $2 - 3u^{10}$

Find the derivative.

- 2) Find $f'(x)$ for $f(x) = (8x - 9)^{-4}$. 2) _____
 A) $-\frac{4}{(8x - 9)^5}$ B) $-\frac{4}{(8x - 9)^3}$ C) $-\frac{32}{(8x - 9)^5}$ D) $-\frac{32}{(8x - 9)^3}$

Provide an appropriate response.

- 3) Find $f'(x)$ for $f(x) = (x^2 + 2)^3$. 3) _____
 A) $f'(x) = 3x^5 + 24x^3 + 24x$ B) $f'(x) = 6x^5 + 12x^3 + 12x$
 C) $f'(x) = 6x^5 + 20x^3 + 24x$ D) $f'(x) = 6x^5 + 24x^3 + 24x$

- 4) Find $\frac{dy}{dt}$ for $y = (5t^2 - 4t)^2$. 4) _____
 A) $2(5t^2 - 4t) + (10t - 4)$ B) $2(5t^2 - 4t)(10t - 4)$
 C) $(5t^2 - 4t)(10t - 4)$ D) $2(10t - 4)$

- 5) Find $\frac{dy}{dx}$ for $y = 17^{x-1}$. 5) _____
 A) $17^{x-1} \ln(x)$ B) $17 \ln(17)$ C) $17^{x-1} \ln(17^{x-1})$ D) $17^{x-1} \ln(17)$

Find the percentage rate of change of $f(x)$ at the indicated value of x . Round to the nearest tenth of a percent.

- 6) $f(x) = 200 + 50x$; $x = 3$ 6) _____
 A) 14.3% B) -14.3% C) 33.3% D) 57.1%

Find the elasticity of the demand function as a function of p .

- 7) $x = D(p) = 800 - p$ 7) _____
 A) $E(p) = \frac{p}{p - 800}$ B) $E(p) = p(800 - p)$
 C) $E(p) = \frac{p}{800 - p}$ D) $E(p) = \frac{1}{800 - p}$

Use the price-demand equation to determine whether demand is elastic, is inelastic, or has unit elasticity at the indicated values of p .

- 8) $x = f(p) = 214 - 5p$; $p = 31$. 8) _____
 A) Inelastic B) Unit elasticity C) Elastic
- 9) $x = f(p) = 2005 - p^2$; $p = 13$ 9) _____
 A) Inelastic B) Elastic C) Unit elasticity

Answer Key

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- 1) C
- 2) C
- 3) D
- 4) B
- 5) D
- 6) A
- 7) C
- 8) C
- 9) A