Chain Rule – Multiple Choice Practice

Name:

Choose the best answer for each problem below.

Find the derivative of $f(x) = x^3 (3x+1)^5$ a) $f'(x) = 18x^5 (3x+1)^9$ b) $f'(x) = 3x^2 (3x+1)^4 (8x+1)$ c) $f'(x) = 3x^2 (3x+1)^4 (8x^2 + x)$ 1)

a)
$$f'(x) = 18x^5(3x+1)^9$$

b)
$$f'(x) = 3x^2(3x+1)^4(8x+1)$$

c)
$$f'(x) = 3x^2(3x+1)^4(8x^2+x)$$

Find the derivative of
$$g(x) = \left(\frac{2x-5}{3x^2+1}\right)^6$$

$$12(2x-5)^5(-3x^2+15x+1)$$

Find the derivative of
$$12(2x-5)^5(-3x^2)$$

Find the derivative of
$$g'(x) = \frac{12(2x-5)^5(-3x^2+15x+1)}{(3x^2+1)^7}$$

$$g'(x) = \frac{12(2x-5)^5(-3x^2+15x+1)}{(3x^2+1)^3}$$

$$g'(x) = \frac{12(2x-5)^5(-6x^2+15x)}{(3x^2+1)^6}$$

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$$g'(x) = \frac{12(2x-5)^5(-6x^2+15x)}{(3x^2+1)^6}$$

3) Find the derivative of
$$y = \frac{x}{\sqrt{7-4x}}$$

a) $\frac{dy}{dx} = \frac{7-2x}{(7-4x)^{\frac{3}{2}}}$ b) $\frac{dy}{dx} = \frac{2x}{(7-4x)}$ c) $\frac{dy}{dx} = \frac{7-2x}{(7-4x)^2}$

$$\frac{dy}{dx} = \frac{7 - 2x}{(7 - 4x)^{3/2}}$$

$$\frac{dy}{dx} = \frac{2x}{(7-4x)}$$

c)
$$\frac{dy}{dx} = \frac{7 - 2x}{(7 - 4x)^2}$$

4) Find the derivative of
$$y = (4x+1)(1-x)^3$$

a)
$$-12(1-x)^2$$

b)
$$(1-x)^2(1+8x)$$

$$(1-x)^2(1-16x)$$

a)
$$-12(1-x)^2$$
 b) $(1-x)^2(1+8x)$ c) $(1-x)^2(1-16x)$
d) $3(1-x)^2(4x+1)$ e) $(1-x)^2(16x+7)$

e)
$$(1-x)^2(16x+7)$$

5) Find the derivative of
$$y = \sqrt{3-2x}$$

$$\frac{1}{2\sqrt{3-2x}}$$

b)
$$-\frac{1}{\sqrt{3-2x}}$$

a)
$$\frac{1}{2\sqrt{3-2x}}$$
 b) $-\frac{1}{\sqrt{3-2x}}$ c) $-\frac{(3-2x)^{\frac{3}{2}}}{3}$ d) $-\frac{1}{3-2x}$ e) $\frac{2}{3}(3-2x)^{\frac{3}{2}}$

d)
$$-\frac{1}{3-2x}$$

$$\frac{2}{3}(3-2x)^{\frac{3}{2}}$$