1. Find $f'(x)$ for the function $f(x) = 3x^2 - 5x + 8$

A. $3x - 5$
B. $6x - 5$
C. $6x - 5 + 8x^{-1}$
D. $3x - 5 + 8x^{-1}$
E. None of these

1. Find $f'(x)$ for the function $f(x) = 3x^2 - 5x + 8$

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C. $6x - 5 + 8x^{-1}$
D. $3x - 5 + 8x^{-1}$
E. None of these

$f'(x) = 3(2x^1) - 5 + 0$
$= 6x$

2. Find $f'(x)$ for the function $f(x) = 3x^{-5}$

A. $3x^{-4}$
B. $3x^{-6}$
C. $-15x^{-4}$
D. $-15x^{-6}$
E. None of these

2. Find $f'(x)$ for the function $f(x) = 3x^{-5}$

A. $3x^{-4}$
B. $3x^{-6}$
C. $-15x^{-4}$
D. $-15x^{-6}$
E. None of these

$f'(x) = 3(-5x^{-6})$
$= -15x^{-6}$

3. Find $f'(x)$ for the function $f(x) = (x^2 - 5)(2x + 3)$

A. $4x$
B. $4x^2$
C. $6x^2 + 6x - 10$
D. $6x^2 - 4x - 15$
E. None of these

3. Find $f'(x)$ for the function $f(x) = (x^2 - 5)(2x + 3)$

A. $4x$
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C. $6x^2 + 6x - 10$
D. $6x^2 - 4x - 15$
E. None of these

$f'(x) = (x^2 - 5)(2x + 3)' + (2x + 3)(x^2 - 5)'$
$= (x^2 - 5)(2) + (2x + 3)(2x)$
$= 2x^2 - 10 + 4x^2 + 6x$
$= 6x^2 + 6x - 10$

4. Find $f'(x)$ for the function $f(x) = \frac{5+3x}{2x-1}$

A. $\frac{3}{2}$

B. $\frac{13}{2x-1}$

C. $\frac{-13}{4x^2-4x+1}$

D. $\frac{13}{4x^2-4x+1}$

E. None of these

4. Find $f'(x)$ for the function $f(x) = \frac{5+3x}{2x-1}$

A. $\frac{3}{2}$

B. $\frac{13}{2x-1}$

C. $\frac{-13}{4x^2-4x+1}$

D. $\frac{13}{4x^2-4x+1}$

E. None of these

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

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

$$= \frac{6x-3-10-6x}{4x^2-4x+1}$$

$$= \frac{-13}{4x^2-4x+1}$$

5. Find $f'(x)$ for the function $f(x) = \frac{3}{2-x}$

A. 0

B. $3x^{-2}$

C. $\frac{-3}{x^2-4x+4}$

D. $\frac{3}{4x^2-4x+4}$

E. None of these

5. Find $f'(x)$ for the function $f(x) = \frac{3}{2-x}$

A. 0

B. $3x^{-2}$

C. $\frac{-3}{x^2-4x+4}$

D. $\frac{3}{4x^2-4x+4}$

E. None of these

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

$$= \frac{(2-x)(0) - 3(-1)}{(2-x)^2}$$

$$= \frac{3}{x^2-4x+4}$$

6. Let *u* and *v* be functions of x that are differential at $x = 0$ with the following values: $u(0) = 5$, $u'(0) = -2$, $v(0) = 3$, $v'(0) = -1$. Find the value of $\frac{d}{dx}(uv)$.

A. -11

B. -1

C. 1

D. 2

E. None of these

6. Let *u* and *v* be functions of x that are differential at $x = 0$ with the following values: $u(0) = 5$, $u'(0) = -2$, $v(0) = 3$, $v'(0) = -1$. Find the value of $\frac{d}{dx}(uv)$.

A. -11

B. -1

C. 1

D. 2

E. None of these

$$(uv)' = uv' + vu'$$

$$(uv)'\Big|_{x=0} = 5(-1) + 3(-2)$$

$$= -5 - 6$$

$$= -11$$

7. Let u and v be functions of x that are differential at $x = 0$ with the following values: $u(0) = 5$, $u'(0) = -2$, $v(0) = 3$, $v'(0) = -1$. Find the value of $\frac{d}{dx}\left(\frac{u}{v}\right)$.

A. -1
B. $\frac{-1}{9}$
C. $\frac{1}{9}$
D. 2
E. None of these

7. Let u and v be functions of x that are differential at $x = 0$ with the following values: $u(0) = 5$, $u'(0) = -2$, $v(0) = 3$, $v'(0) = -1$. Find the value of $\frac{d}{dx}\left(\frac{u}{v}\right)$.

A. -1
B. $\frac{-1}{9}$
C. $\frac{1}{9}$
D. 2
E. None of these

$\left(\frac{u}{v}\right)' = \frac{vu' - uv'}{v^2}$

$\left(\frac{u}{v}\right)'\Big|_{x=0} = \frac{3(-2) - 5(-1)}{3^2}$

$= \frac{-6+5}{9}$

$= \boxed{\frac{-1}{9}}$

8. Find $f''(x)$ for the function $f(x) = 5x^2 - 7x + 2$

A. 5
B. 10
C. 5x
D. 10x
E. None of these

8. Find $f''(x)$ for the function $f(x) = 5x^2 - 7x + 2$

A. 5
B. 10
C. 5x
D. 10x
E. None of these

$f'(x) = 10x - 7$

$f''(x) = (10x - 7)'$

$= \boxed{10}$

9. Find $f''(2)$ for the function $f(x) = 3x^{-2}$

A. -6
B. $\frac{3}{16}$
C. $\frac{9}{8}$
D. 6
E. None of these

9. Find $f''(2)$ for the function $f(x) = 3x^{-2}$

A. -6
B. $\frac{3}{16}$
C. $\frac{9}{8}$
D. 6
E. None of these

$f'(x) = -6x^{-3}$

$f''(x) = \left(f'(x)\right)'$

$= \left(-6x^{-3}\right)'$

$= 18x^{-4}$

$f''(2) = 18(2)^{-4} = \frac{18}{16} = \boxed{\frac{9}{8}}$