

Precalc

Review Ch. 15

Quiz 15.4

Lesson 15-1 (Pages 941–948)

Evaluate each limit.

1. $\lim_{x \rightarrow 4} (x^2 + 2x - 2) = 22$

5. $\lim_{x \rightarrow -2} \frac{x^2 + 5x + 6}{x^2 + x - 2}$

At most one problem...

Lesson 15-2 *(Pages 951–960)*

Use the definition of derivative to find the derivative of each function.

1. $f(x) = \underset{\textcolor{red}{/}}{5}x$

2. $f(x) = \underset{\textcolor{red}{/}}{9}x - 2$

$\frac{1}{2}$

$2x + 4$

Use the derivative rules to find the derivative of each function.

3. $f(x) = \frac{1}{2}x + \frac{2}{3}$

4. $f(x) = x^2 + 4x + 8$

$$\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} = \frac{[(x+h)^2 + 4(x+h) + 8] - [x^2 + 4x + 8]}{h}$$

$$\frac{\cancel{x^2} + 2hx + \cancel{h^2} + \cancel{4x} + 4h + \cancel{8} - \cancel{x^2} - \cancel{4x} - \cancel{8}}{h}$$

$$\frac{2hx + h^2 + 4h}{h}$$

$$\lim_{h \rightarrow 0} \frac{h(2x + h + 4)}{h} = 2x + 0 + 4$$

Find the antiderivative of each function.

5. $f(x) = x^5$

$$F(x) = \frac{x^6}{6} + C$$

6. $f(x) = 2x^2 - 8x + 2$

$$2\left(\frac{x^3}{3}\right) - 8\left(\frac{x^2}{2}\right) + 2x + C$$

$$F(x) = \frac{2}{3}x^3 - 4x^2 + 2x + C$$

At most 1 problem...

Lesson 15-3 (Pages 961-968)

Use limits to evaluate each integral.

1. $\int_0^3 5x \, dx$ $i = \frac{3}{n}$ $0 + \frac{3i}{n}$

$$\lim 5 \sum \left(\frac{3i}{n} \right) \frac{3}{n}$$

$$\lim 5 \sum_{i=1}^n \frac{9i}{n^2} \quad \frac{9(1+2+3 \dots)}{n^2}$$

$$\left. \frac{5x^2}{2} \right|_0^3$$

$$\frac{5 \cdot 9}{2} - \frac{5 \cdot 0}{2}$$

$$\lim \frac{9 \cdot \cancel{n}(n+1)}{\cancel{n^2} \cdot 2}$$

$$\frac{9n+9}{2n}$$

$$\lim_{n \rightarrow \infty} \frac{9}{2} + \left(\frac{9}{n} \right)$$

$$5 \cdot \frac{9}{2} = \frac{45}{2}$$

Method of your choice

Lesson 15-4 (Pages 970–976)

Evaluate each indefinite integral.

1. $\int x^6 dx$

$$\frac{x^7}{7} + C$$

2. $\int 5x^4 dx$

$$\cancel{5} \frac{x^5}{\cancel{5}} = x^5 + C$$

Method of your choice

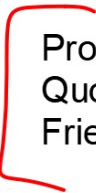
Evaluate each definite integral.

5. $\int_{-2}^2 14x^6 dx$

6. $\int_0^6 (x + 2) dx$

$$14 \cdot \frac{x^7}{7} \Big|_{-2}^2 = 2x^7 \Big|_{-2}^2 = (2 \cdot 2^7) - (-2 \cdot 2^7) = 512$$

$-2 \cdot -2 \cdot -2 \dots$

A red bracket is positioned to the left of the text, spanning the vertical range of the three items.

Product rule
Quotient rule
Friendly functions