Topic: Solving with substitution

Question: Use substitution to evaluate the limit.

$$\lim_{x \to 5} \frac{x^2 + 2x + 1}{x + 5}$$

Answer choices:

A 12

B 6

C 1.6

D 3.6

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Solution: D

Substitute $x = 5$ into the function to evaluate the limit.

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

$$f(5) = \frac{5^2 + 2(5) + 1}{5 + 5}$$

$$f(5) = \frac{36}{10}$$

$$f(5) = 3.6$$

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Topic: Solving with substitution

Question: Use substitution to evaluate the limit.

$$\lim_{x \to 6}(x^3 + 6 - 3x)$$

Answer choices:

A 204

B 198

C 240

D 234

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Solution: A

Substitute $x = 6$ into the function to evaluate the limit.

$$f(x) = x^3 + 6 - 3x$$

$$f(6) = 6^3 + 6 - 3(6)$$

$$f(6) = 216 + 6 - 18$$

$$f(6) = 204$$

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Topic: Solving with substitution

Question: Use substitution to evaluate the limit.

$$\lim_{x \to 0} \frac{-1}{3(x+3)}$$

Answer choices:

A $-\frac{1}{9}$

B $\frac{1}{9}$

C $-\frac{1}{6}$

D $\frac{1}{6}$

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Solution: A

Substitute $x = 0$ into the function to evaluate the limit.

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

$$f(0) = \frac{-1}{3(0+3)}$$

$$f(0) = \frac{-1}{3(3)}$$

$$f(0) = -\frac{1}{9}$$

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