

**Topic:** Solving with factoring**Question:** Use factoring to find the limit.

$$\lim_{t \rightarrow -1} \frac{(t+1)(t^2 - t + 1)}{t+1}$$

**Answer choices:**

A      0

B      3

C      -1

D       $\infty$ 

**Solution: B**

The numerator and denominator share a common factor of  $t + 1$ , which can be canceled from the function.

$$\lim_{t \rightarrow -1} \frac{(t + 1)(t^2 - t + 1)}{t + 1}$$

$$\lim_{t \rightarrow -1} (t^2 - t + 1)$$

Now use substitution to evaluate the limit.

$$(-1)^2 - (-1) + 1$$

$$1 + 1 + 1$$

$$3$$



**Topic:** Solving with factoring**Question:** Use factoring to find the limit.

$$\lim_{x \rightarrow 2} \frac{x^2 - 2x}{x - 2}$$

**Answer choices:**

- A      4
- B      -4
- C      2
- D      -2



**Solution: C**

Factor the numerator and denominator as completely as possible.

$$\lim_{x \rightarrow 2} \frac{x^2 - 2x}{x - 2}$$

$$\lim_{x \rightarrow 2} \frac{x(x - 2)}{x - 2}$$

Cancel the common factor of  $x - 2$ .

$$\lim_{x \rightarrow 2} x$$

Then use direct substitution to evaluate the limit.

$$2$$



**Topic:** Solving with factoring**Question:** Use factoring to find the limit.

$$\lim_{x \rightarrow 3} \frac{x^2 - 7x + 12}{x^2 - 9}$$

**Answer choices:**

A  $\frac{1}{3}$

B  $-\frac{1}{3}$

C  $\frac{1}{6}$

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



**Solution: D**

Factor the numerator and denominator as completely as possible.

$$\lim_{x \rightarrow 3} \frac{x^2 - 7x + 12}{x^2 - 9}$$

$$\lim_{x \rightarrow 3} \frac{(x - 4)(x - 3)}{(x + 3)(x - 3)}$$

Cancel the common factor of  $x - 3$ .

$$\lim_{x \rightarrow 3} \frac{x - 4}{x + 3}$$

Then use direct substitution to evaluate the limit.

$$\frac{3 - 4}{3 + 3}$$

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

