CIRCLE THE VALUE OF THE INDICATED LIMITS.

4. \[ \lim_{x \to 2} [3x^2 - 5x + 3] = \]

[A] 2  
[B] 5  
[C] 6  
[D] 8  
[E] NONE OF THE ABOVE

CORRECT ANSWER: B

\[
\lim_{x \to 2} [3x^2 - 5x + 3] = 3(2^2) - 5(2) + 3 = 12 - 10 + 3 = 2 + 3 = 5.
\]

5. \[ \lim_{x \to 3} \frac{x^2 - 9}{x - 3} = \]

[A] 2  
[B] 5  
[C] 6  
[D] 8  
[E] NONE OF THE ABOVE

\[
\lim_{x \to 3} \frac{x^2 - 9}{x - 3} = \lim_{x \to 3} \frac{(x - 3)(x + 3)}{x - 3} = \lim_{x \to 3} [x + 3] = 3 + 3 = 6.
\]

CORRECT ANSWER: C
6. \( \lim_{{x \to 1}} \frac{2x^2 + 6x - 8}{x^2 - 1} = \)

[A] 2  
[B] 5  
[C] 6  
[D] 8  
[E] NONE OF THE ABOVE

CORRECT ANSWER: B

\[
\lim_{{x \to 1}} \frac{2x^2 + 6x - 8}{x^2 - 1} = \lim_{{x \to 1}} \frac{(x - 1)(2x + 8)}{(x - 1)(x + 1)} = \lim_{{x \to 1}} \frac{2x + 8}{x + 1} = \frac{10}{2} = 5.
\]

Suppose that \( f \) is the function with domain \([2, 9]\) and rule given by \( f(x) = x^2 + 16 \), and that \( g \) is the function with domain \([3, 99]\) and rule given by \( g(x) = \sqrt{4 + x} \). Choose the answer with the same value, in each of the following problems.

7. \( (g \circ f)(4) = \)

[A] 2  
[B] 5  
[C] 6  
[D] 8  
[E] NONE OF THE ABOVE

CORRECT ANSWER: C

\[
(g \circ f)(4) = g(f(4)) = g(4^2 + 16) = g(16 + 16) = g(32) = \sqrt{4 + 32} = \sqrt{36} = 6.
\]

8. \( (f - g)(3) = \)

[A] 25  
[B] 25 + \sqrt{7}  
[C] 24  
[D] 25 - \sqrt{7}  
[E] NONE OF THE ABOVE

CORRECT ANSWER: D

\[
(f - g)(3) = f(3) - g(3) = [3^2 + 16] - [\sqrt{3 + 4}] = 25 - \sqrt{7}.
\]
9. \((f - 16) \cdot g)(5) =

[A] 75
[B] \((25 + 16)(3)\)
[C] \((25 - 16)(3)\)
[D] \(25 - \sqrt{7}\)
[E] NONE OF THE ABOVE

**CORRECT ANSWER: A**

\((f - 16) \cdot g)(5) = [f(5) - 16] \cdot g(5) = [(5^2 + 16) - 16] \cdot \sqrt{4 + 5} = 25\sqrt{9} = (25)(3) = 75\)

10. \(\left(\frac{f}{g}\right)(5) =

[A] \(\frac{g(5)}{f(5)}\)
[B] \(\frac{25 + 16}{3}\)
[C] \(\frac{25 + 16}{9}\)
[D] \(\frac{3}{25 + 16}\)
[E] NONE OF THE ABOVE

**CORRECT ANSWER: B**

\(\left(\frac{f}{g}\right)(5) = \frac{f(5)}{g(5)} = \frac{5^2 + 16}{\sqrt{4 + 5}} = \frac{25 + 16}{3}\).