F-C4   NAME:

Consider $f(x) = -2x^2 + 18x - 28$

1. Is $f(x)$ continuous on the interval [5,9]? Explain.

2. Explain why there must be a value c in [5,9] such that $f(c) = 8$

3. Find the value or values of c in [5,9] such that $f(c) = 8$ guaranteed to exist in problem 2.

D-C1

4. Use the limit definition of derivative to show that if $f(x) = 2x^2 - 3x + 5$, then $f'(x) = 4x - 3$.

D-C7

For each problem, find the derivative function.

5. $y = -3x^3 - 9x^5 + \frac{12}{5}x^4 + 2$

6. $f(x) = 4x^2 - \frac{4}{\sqrt[3]{x^2}} + 5\sqrt[5]{x^2}$

7. $y = \frac{2}{x} + \sqrt{x} - \frac{1}{2x^4}$

8. $y = \pi^4$

F-L1a:

Evaluate each limit

9. $\lim\limits_{x \to 3} \dfrac{2}{x+5}$
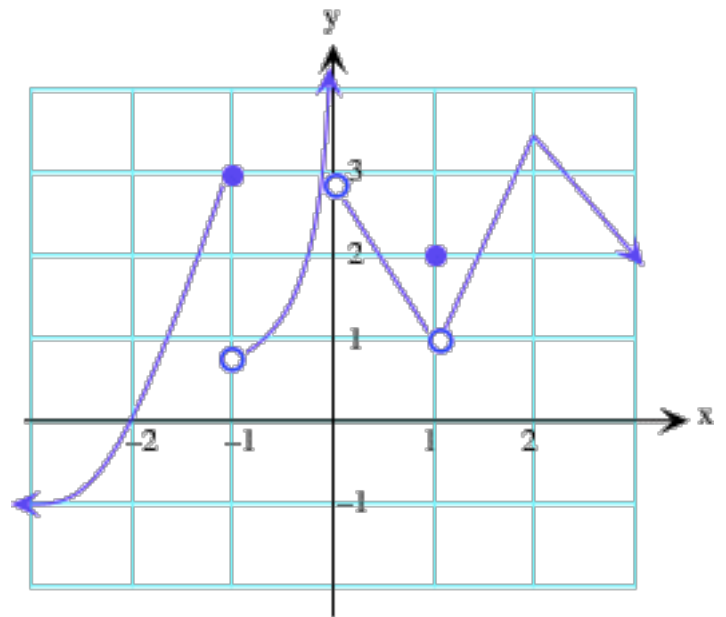
10. $\lim\limits_{x \to 2} \dfrac{2-x}{4-x^2}$

F-L2a:

Use the graph to rate each as true or false. If false, explain why.

11. $\lim\limits_{x \to 0} f(x) = 3$

12. $\lim\limits_{x \to 1} f(x) = 1$

13. $\lim\limits_{x \to -1-} f(x) = 3$

14. $\lim\limits_{x \to -1} f(x) = 3$

F-C3

15. Find and classify any discontinuities of the function. Justify your classifications using limits. $f(x) = \frac{x+5}{5-4x-x^2}$

F-B1:

16. Find any vertical and horizontal asymptotes of the function. Justify your answer with limits. $f(x) = \frac{2x-3}{x+5}$