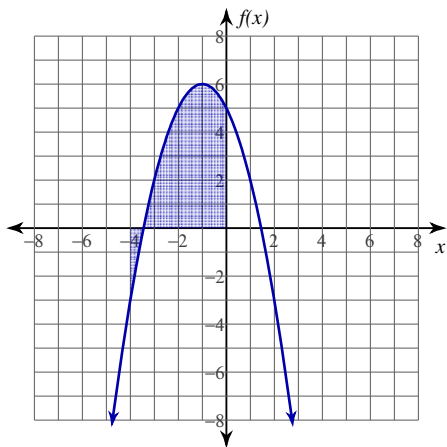


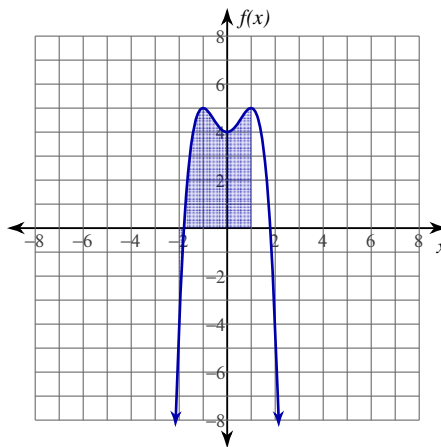
Mean Value Theorem for Integrals

For each problem, find the average value of the function over the given interval.

1) $f(x) = -x^2 - 2x + 5$; $[-4, 0]$

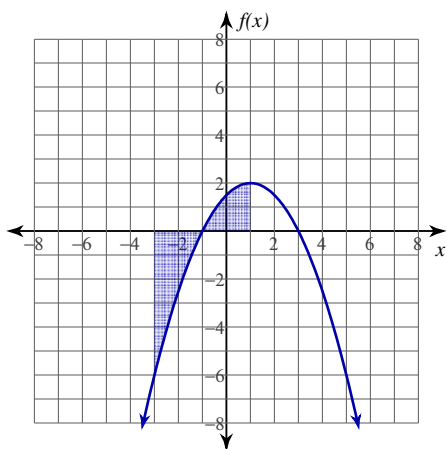


2) $f(x) = -x^4 + 2x^2 + 4$; $[-2, 1]$

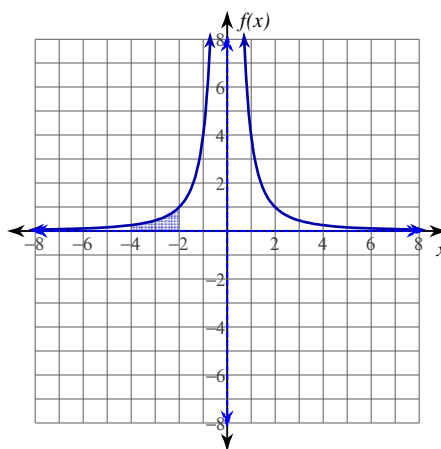


For each problem, find the values of c that satisfy the Mean Value Theorem for Integrals.

3) $f(x) = -\frac{x^2}{2} + x + \frac{3}{2}$; $[-3, 1]$



4) $f(x) = \frac{4}{x^2}$; $[-4, -2]$



For each problem, find the average value of the function over the given interval.

5) $f(x) = -x^3 + 7x^2 - 11x + 3$; $[1, 5]$

6) $f(x) = -x^5 + 3x^3$; $[0, 1]$

7) $f(x) = 4x^{\frac{1}{2}}$; $[0, 3]$

8) $f(x) = x^5 - 2x^3 + x$; $[-1, 0]$

9) $f(x) = \frac{1}{x}$; $[2, 3]$

10) $f(x) = x^5 - 4x^3 + 2x - 1$; $[-2, 2]$

11) $f(x) = -x^5 + 4x^3 - 5x - 3$; $[-2, 0]$

12) $f(x) = x^5 - 2x^3 - 2$; $[-1, 1]$

For each problem, find the average value of the function over the given interval. Then, find the values of c that satisfy the Mean Value Theorem for Integrals.

13) $f(x) = -x + 2$; $[-2, 2]$

14) $f(x) = -x^2 - 8x - 17$; $[-6, -3]$

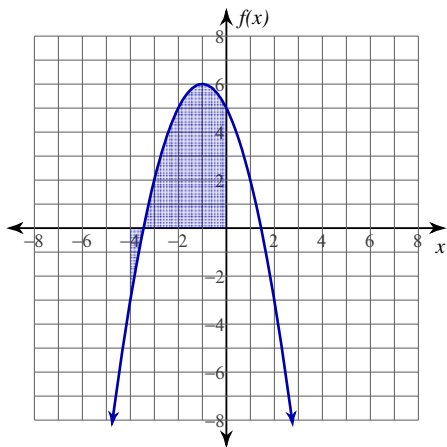
15) $f(x) = -3(2x - 6)^{\frac{1}{2}}$; $[3, 5]$

16) $f(x) = \frac{4}{(2x + 6)^2}$; $[-6, -5]$

Mean Value Theorem for Integrals

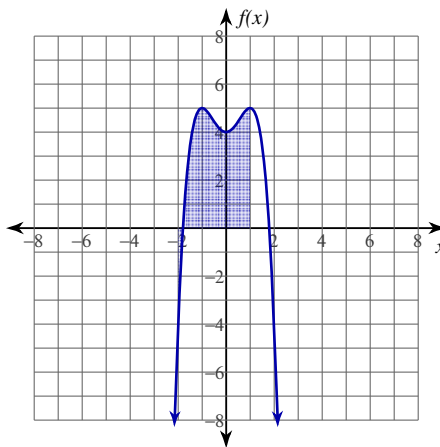
For each problem, find the average value of the function over the given interval.

1) $f(x) = -x^2 - 2x + 5$; $[-4, 0]$



$$\frac{11}{3} \approx 3.667$$

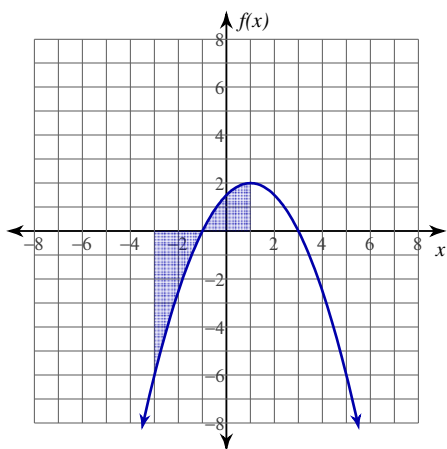
2) $f(x) = -x^4 + 2x^2 + 4$; $[-2, 1]$



$$\frac{19}{5} = 3.8$$

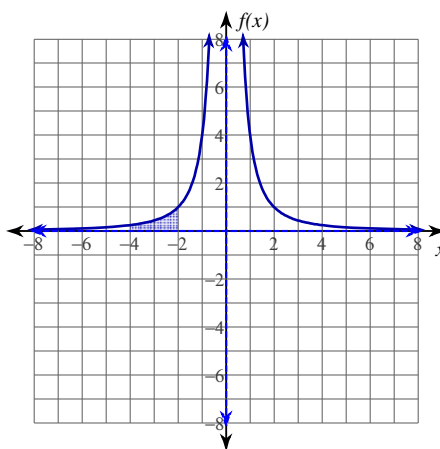
For each problem, find the values of c that satisfy the Mean Value Theorem for Integrals.

3) $f(x) = -\frac{x^2}{2} + x + \frac{3}{2}$; $[-3, 1]$



$$\frac{3 - 4\sqrt{3}}{3} \approx -1.309$$

4) $f(x) = \frac{4}{x^2}$; $[-4, -2]$



$$-2\sqrt{2} \approx -2.828$$

For each problem, find the average value of the function over the given interval.

5) $f(x) = -x^3 + 7x^2 - 11x + 3$; $[1, 5]$

$$\frac{10}{3} \approx 3.333$$

6) $f(x) = -x^5 + 3x^3$; $[0, 1]$

$$\frac{7}{12} \approx 0.583$$

7) $f(x) = 4x^{\frac{1}{2}}$; $[0, 3]$

$$\frac{8\sqrt{3}}{3} \approx 4.619$$

8) $f(x) = x^5 - 2x^3 + x$; $[-1, 0]$

$$-\frac{1}{6} \approx -0.167$$

9) $f(x) = \frac{1}{x}$; $[2, 3]$

$$\ln 3 - \ln 2 \approx 0.405$$

10) $f(x) = x^5 - 4x^3 + 2x - 1$; $[-2, 2]$

$$-1$$

11) $f(x) = -x^5 + 4x^3 - 5x - 3$; $[-2, 0]$

$$-\frac{2}{3} \approx -0.667$$

12) $f(x) = x^5 - 2x^3 - 2$; $[-1, 1]$

$$-2$$

For each problem, find the average value of the function over the given interval. Then, find the values of c that satisfy the Mean Value Theorem for Integrals.

13) $f(x) = -x + 2$; $[-2, 2]$

Average value of function: 2
Values that satisfy MVT: 0

14) $f(x) = -x^2 - 8x - 17$; $[-6, -3]$

Average value of function: -2
Values that satisfy MVT: -5, -3

15) $f(x) = -3(2x - 6)^{\frac{1}{2}}$; $[3, 5]$

Average value of function: -4
Values that satisfy MVT: $\frac{35}{9} \approx 3.889$

16) $f(x) = \frac{4}{(2x + 6)^2}$; $[-6, -5]$

Average value of function: $\frac{1}{6} \approx 0.167$
Values that satisfy MVT: $-3 - \sqrt{6} \approx -5.449$