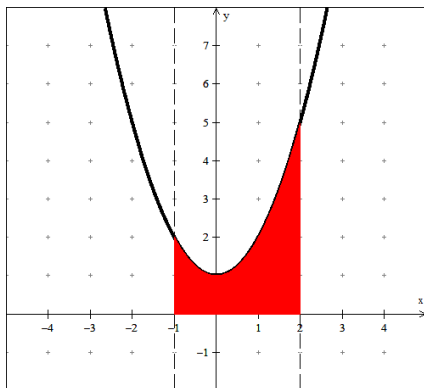


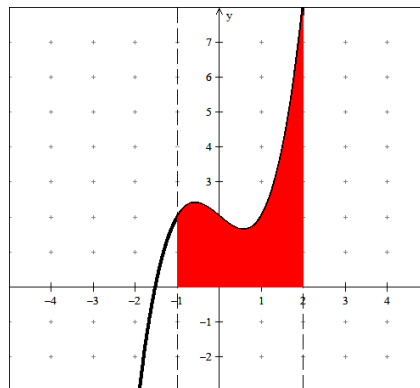
Directions: Determine the area between the curve, the  $x$  - axis ( $y = 0$ ) and the bounds provided.

1.)  $y = x^2 + 1, y = 0, x = -1, x = 2$



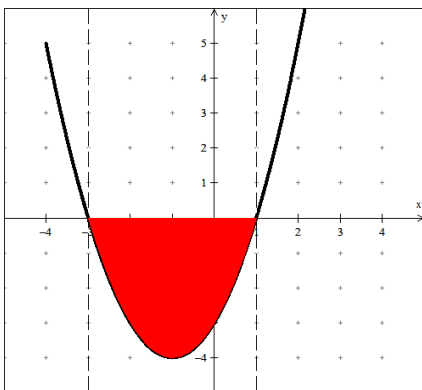
$$\int_{-1}^2 (x^2 + 1) dx = 6$$

2.)  $y = x^3 - x + 2, y = 0, x = -1, x = 2$



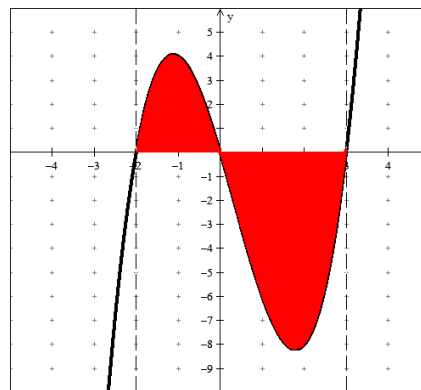
$$\int_{-1}^2 (x^3 - x + 2) dx = \frac{33}{4}$$

3.)  $y = x^2 + 2x - 3, y = 0, x = -3, x = 1$



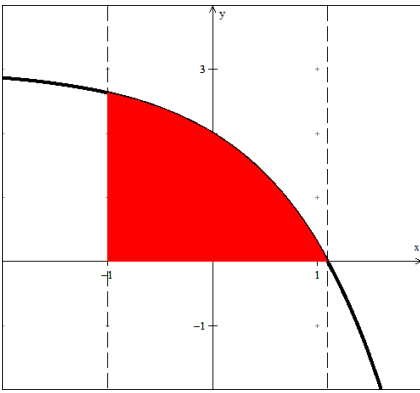
$$\left| \int_{-3}^1 (x^2 + 2x - 3) dx \right| = \frac{32}{3}$$

4.)  $y = x^3 - x^2 - 6x, y = 0, x = -2, x = 3$



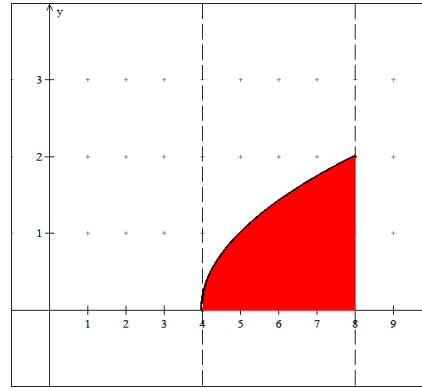
$$\int_{-2}^0 (x^3 - x^2 - 6x) dx + \left| \int_0^3 (x^3 - x^2 - 6x) dx \right| = \frac{253}{12}$$

5.)  $y = -e^x + 3, y = 0, x = -1$



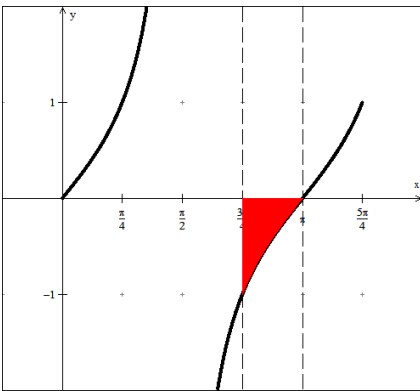
$$\int_{-1}^{\ln(3)} (-e^x + 3) dx = \frac{1}{e} + \ln(27) \approx 3.664$$

6.)  $y = \sqrt{x-4}, y = 0, x = 8$



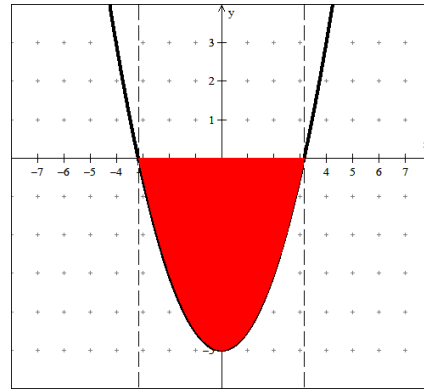
$$\int_4^8 \sqrt{x-4} dx = \frac{16}{3}$$

7.)  $y = \tan x, y = 0, x = \frac{3\pi}{4}, x = \pi$



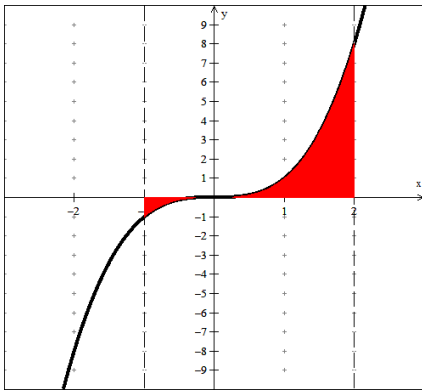
$$\left| \int_{\frac{3\pi}{4}}^{\pi} \tan(x) dx \right| = \frac{\ln(2)}{2} \approx 0.347$$

8.)  $y = \frac{1}{2}x^2 - 5, y = 0$



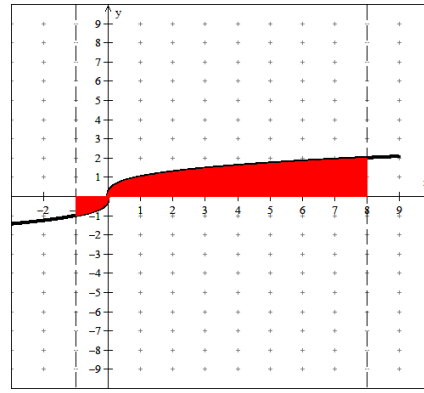
$$\left| \int_{-\sqrt{10}}^{\sqrt{10}} \left( \frac{1}{2}x^2 - 5 \right) dx \right| = \frac{20\sqrt{10}}{3} \approx 21.082$$

9.)  $y = x^3, y = 0, x = -1, x = 2$



$$\left| \int_{-1}^0 x^3 dx \right| + \int_0^2 x^3 dx = \frac{17}{4}$$

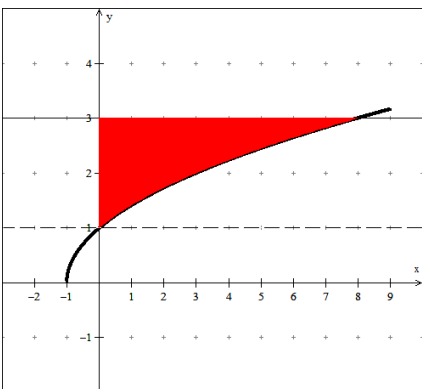
10.)  $y = \sqrt[3]{x}, y = 0, x = -1, x = 8$



$$\left| \int_{-1}^0 \sqrt[3]{x} dx \right| + \int_0^8 \sqrt[3]{x} dx = \frac{51}{4}$$

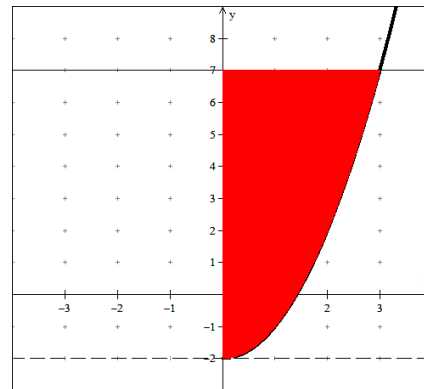
Directions: Determine the area between the curve, the  $y$ -axis ( $x = 0$ ) and the bounds provided.

11.)  $y = \sqrt{x+1}, x = 0, y = 1, y = 3$



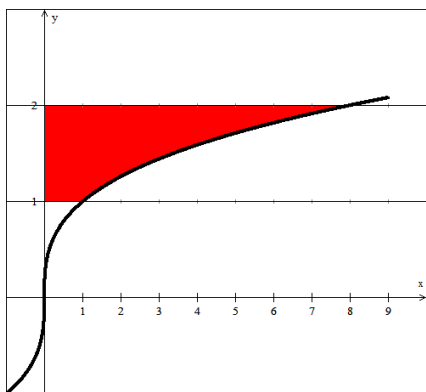
$$\int_1^3 (y^2 - 1) dy = \frac{20}{3}$$

12.)  $y = x^2 - 2, x = 0, y = -2, y = 7$



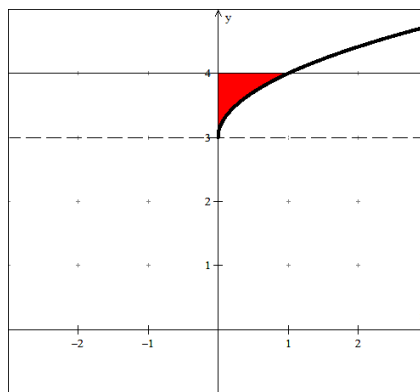
$$\int_{-2}^7 \sqrt{y+2} dy = 18$$

13.)  $y = \sqrt[3]{x}, x = 0, y = 1, y = 2$



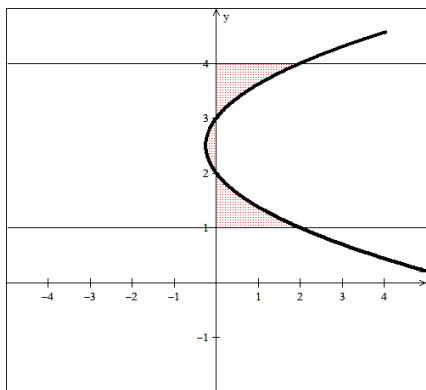
$$\int_1^2 y^3 dy = \frac{15}{4}$$

14.)  $y = \sqrt{x} + 3, x = 0, y = 3, y = 4$



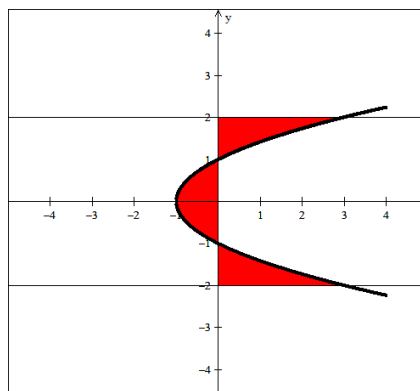
$$\int_3^4 (y - 3)^2 dy = \frac{1}{3}$$

15.)  $x = y^2 - 5y + 6, x = 0, y = 1, y = 4$



$$15.) \int_1^2 (y^2 - 5y + 6) dy + \left| \int_2^3 (y^2 - 5y + 6) dy \right| + \int_3^4 (y^2 - 5y + 6) dy = \frac{11}{6}$$

16.)  $x = y^2 - 1, x = 0, y = -2, y = 2$



$$16.) \int_{-2}^{-1} (y^2 - 1) dy + \left| \int_{-1}^1 (y^2 - 1) dy \right| + \int_1^2 (y^2 - 1) dy = 4$$