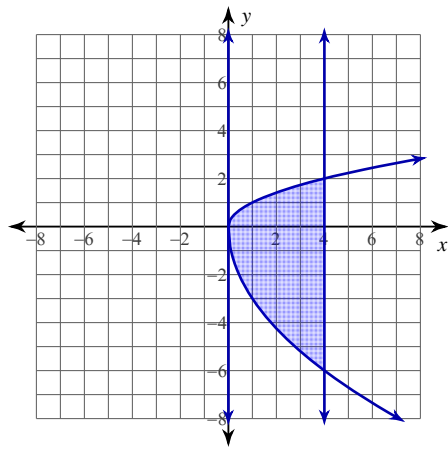


## Practice Quiz - Area Between Curves 7-2

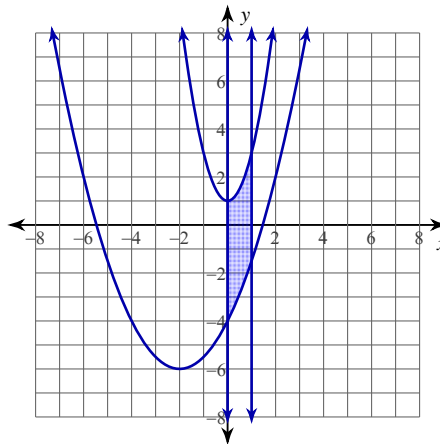
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**For each problem, find the area of the region enclosed by the curves.**

1)  $y = \sqrt{x}$ ,  $y = -3\sqrt{x}$ ,  
 $x = 0$ ,  $x = 4$



2)  $y = 2x^2 + 1$ ,  $y = \frac{x^2}{2} + 2x - 4$ ,  
 $x = 0$ ,  $x = 1$



3)  $y = 2x^2 - 4x + 4$ ,  $y = -2x^2 + 1$ ,  
 $x = 0$ ,  $x = 2$

4)  $y = 2\sqrt{x}$ ,  $y = \frac{x^2}{4}$

$$5) y = -x^3 + 6x, y = -x^2$$

$$6) y = \sin x, y = -\sin x,$$

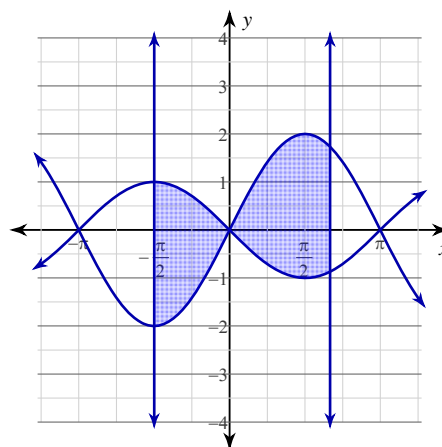
$$x = -\frac{3\pi}{4}, x = \pi$$

$$7) y = 2\cos x, y = -2\cos x,$$

$$x = -\frac{\pi}{2}, x = \frac{5\pi}{6}$$

$$8) y = -\sin x, y = 2\sin x,$$

$$x = -\frac{\pi}{2}, x = \frac{2\pi}{3}$$

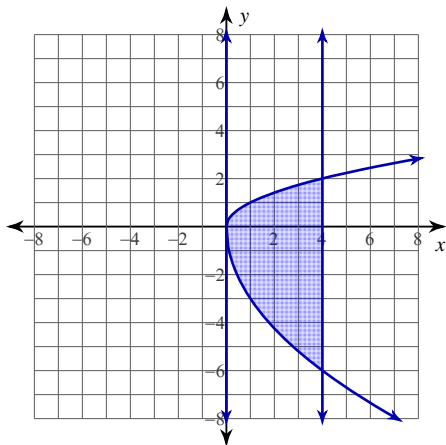


## Practice Quiz - Area Between Curves 7-2

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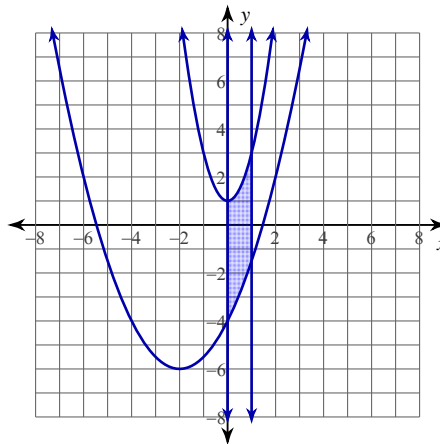
For each problem, find the area of the region enclosed by the curves.

$$1) \ y = \sqrt{x}, \ y = -3\sqrt{x}, \\ x = 0, \ x = 4$$



$$\int_0^4 (\sqrt{x} + 3\sqrt{x}) \, dx \\ = \frac{64}{3} \approx 21.333$$

$$2) \ y = 2x^2 + 1, \ y = \frac{x^2}{2} + 2x - 4, \\ x = 0, \ x = 1$$



$$\int_0^1 \left( 2x^2 + 1 - \left( \frac{x^2}{2} + 2x - 4 \right) \right) \, dx \\ = \frac{9}{2} = 4.5$$

$$3) \ y = 2x^2 - 4x + 4, \ y = -2x^2 + 1, \\ x = 0, \ x = 2$$

$$\int_0^2 (2x^2 - 4x + 4 - (-2x^2 + 1)) \, dx \\ = \frac{26}{3} \approx 8.667$$

$$4) \ y = 2\sqrt{x}, \ y = \frac{x^2}{4}$$

$$\int_0^4 \left( 2\sqrt{x} - \frac{x^2}{4} \right) \, dx \\ = \frac{16}{3} \approx 5.333$$

$$5) y = -x^3 + 6x, y = -x^2$$

$$\int_{-2}^0 (-x^2 - (-x^3 + 6x)) dx + \int_0^3 (-x^3 + 6x + x^2) dx = \frac{253}{12} \approx 21.083$$

$$6) y = \sin x, y = -\sin x,$$

$$x = -\frac{3\pi}{4}, x = \pi$$

$$6 + \sqrt{2} \approx 7.414$$

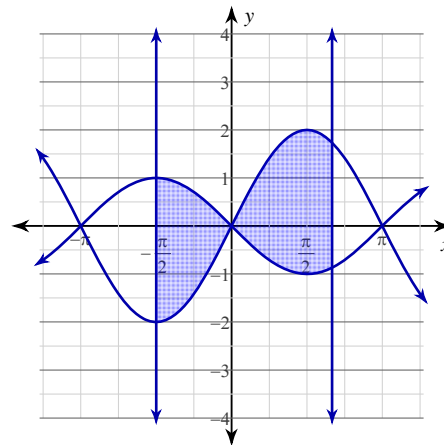
$$7) y = 2\cos x, y = -2\cos x,$$

$$x = -\frac{\pi}{2}, x = \frac{5\pi}{6}$$

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} (2\cos x + 2\cos x) dx + \int_{\frac{5\pi}{6}}^{\pi} (2\cos x + 2\cos x) dx = 10$$

$$8) y = -\sin x, y = 2\sin x,$$

$$x = -\frac{\pi}{2}, x = \frac{2\pi}{3}$$



$$\int_{-\frac{\pi}{2}}^0 (-\sin x - 2\sin x) dx + \int_0^{\frac{2\pi}{3}} (2\sin x + \sin x) dx = \frac{15}{2} = 7.5$$