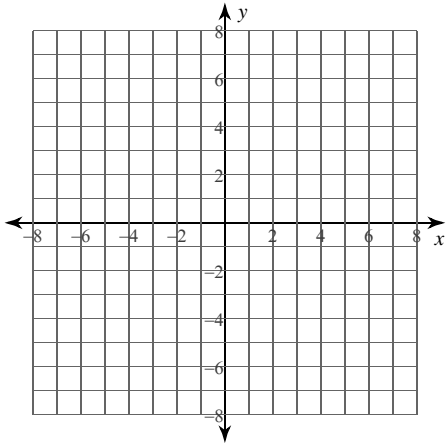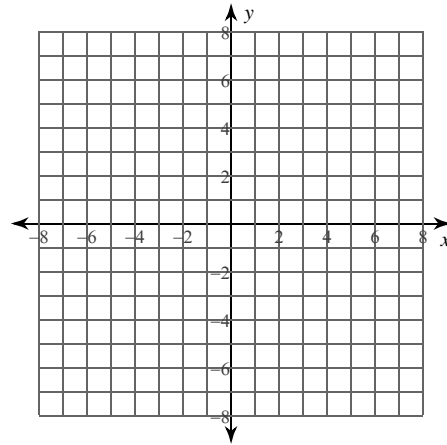Name_____

Calculus Practice: Using Definite Integrals to Calculate Area 3b

For each problem, find the area of the region enclosed by the curves. You may use the provided graph to sketch the curves and shade the enclosed region.
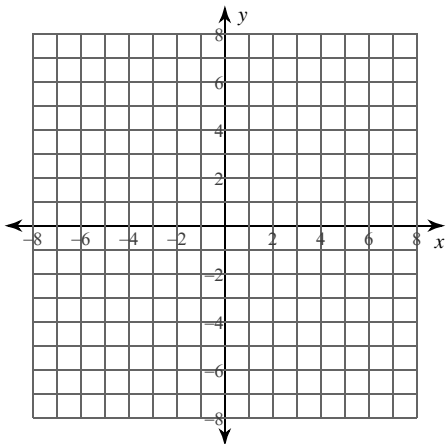
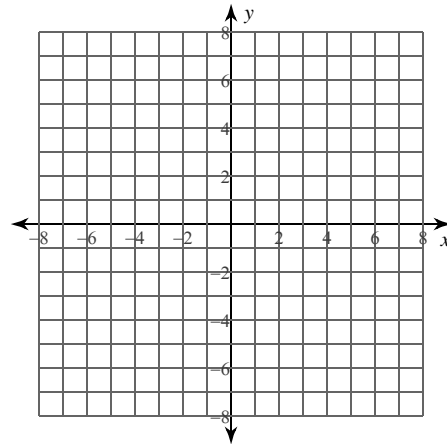1) $y = x^2 - 8x + 12, \ y = x - 2$
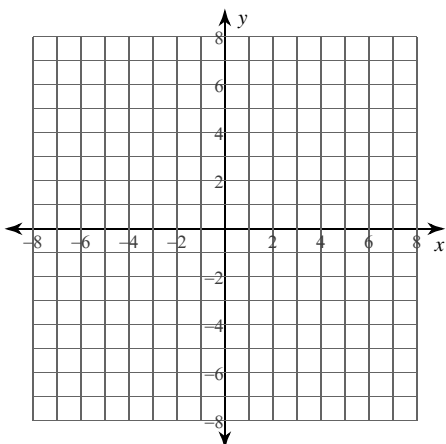

2) $x = 2\sqrt{y}, \ x = \dfrac{y^2}{4}$

3) $y = \dfrac{x^3}{2} + \dfrac{x^2}{2} - \dfrac{5x}{2}, \ y = \dfrac{x}{2}$

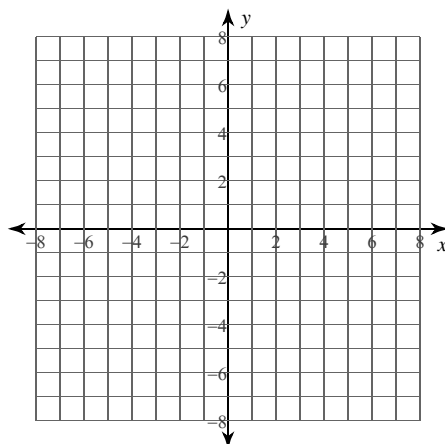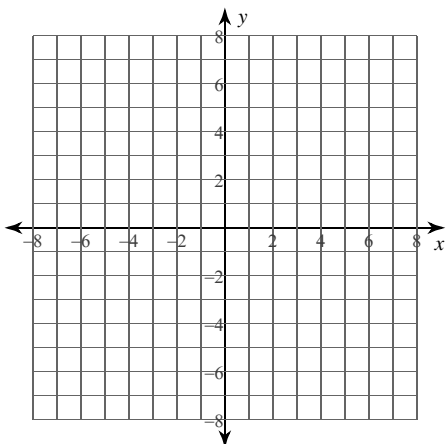
4) $x = 2y^3 + 3y^2 - 4y, \ x = y^2$

5) $y = \dfrac{x^2}{2} + 2x - 1$, $y = -\dfrac{x^2}{2} - 4x - 6$,
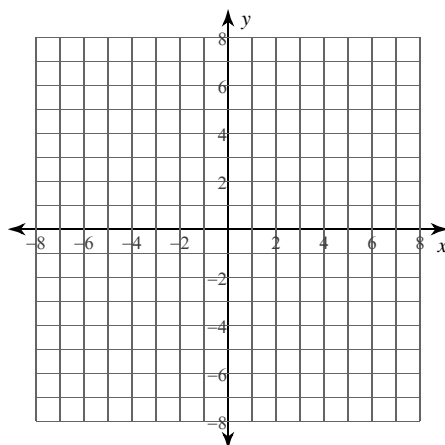
$x = -3$, $x = 0$

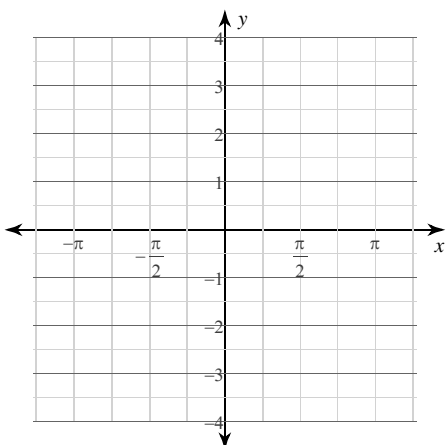6) $y = \dfrac{x^2}{2} + 3x + \dfrac{3}{2}$, $y = -x - 2$,

$x = -4$, $x = 1$

7) $x = -\dfrac{y^2}{2} + 2y$, $x = 0$,

$y = 1$, $y = 6$

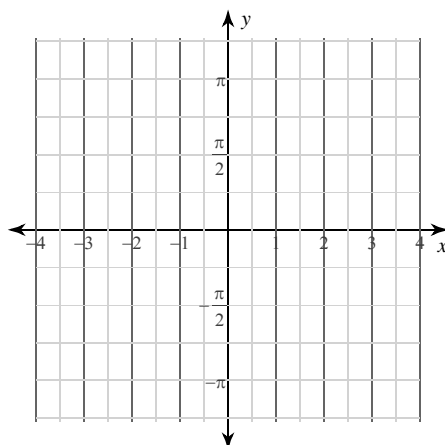8) $x = -y^2 - 8y - 11$, $x = -y^2 - 4y + 1$,

$y = -4$, $y = -1$

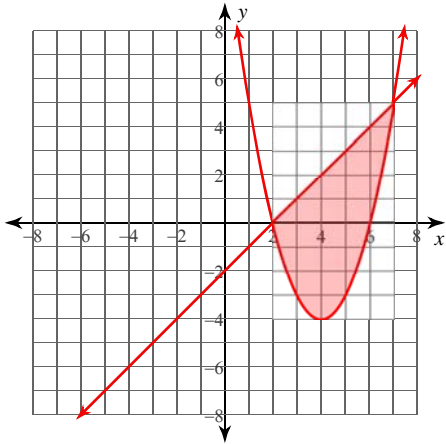9) $y = \cos x$, $y = -\cos x$,

$x = -\pi$, $x = \dfrac{\pi}{4}$

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

$y = -\pi$, $y = \dfrac{\pi}{2}$

Name_____

Calculus Practice: Using Definite Integrals to Calculate Area 3b
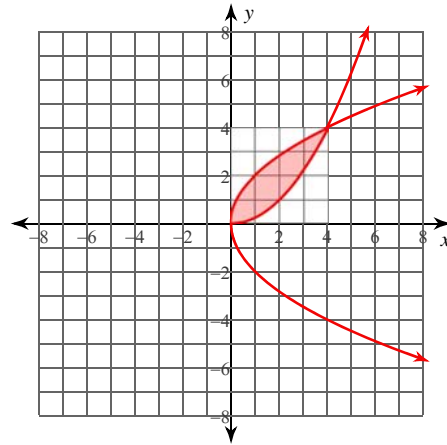
For each problem, find the area of the region enclosed by the curves. You may use the provided graph to sketch the curves and shade the enclosed region.
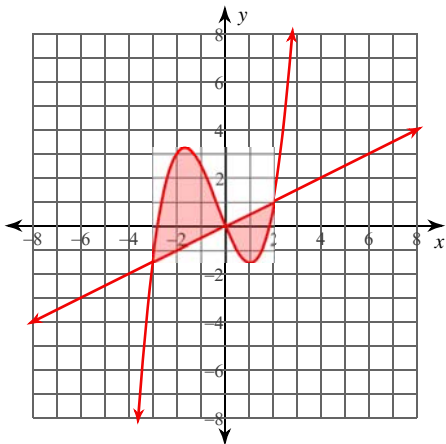
1) $y = x^2 - 8x + 12, \ y = x - 2$

$$\frac{125}{6} \approx 20.833$$

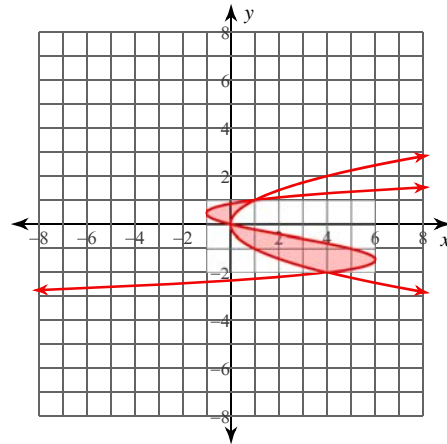2) $x = 2\sqrt{y}, \ x = \frac{y^2}{4}$

$$\frac{16}{3} \approx 5.333$$

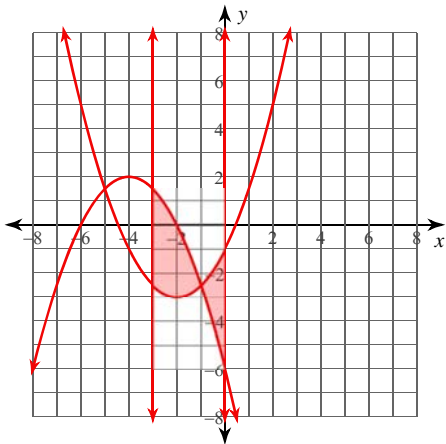3) $y = \frac{x^3}{2} + \frac{x^2}{2} - \frac{5x}{2}, \ y = \frac{x}{2}$

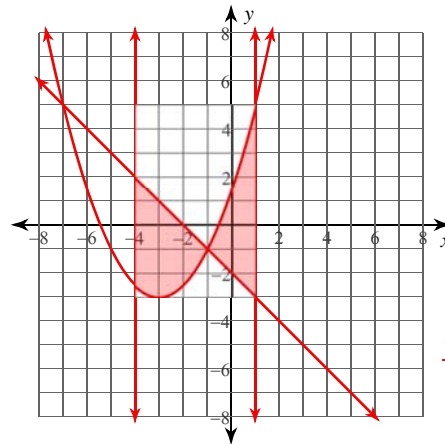$$\frac{253}{24} \approx 10.542$$

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

$$\frac{37}{6} \approx 6.167$$

-1-

5) $y = \dfrac{x^2}{2} + 2x - 1$, $y = -\dfrac{x^2}{2} - 4x - 6$,
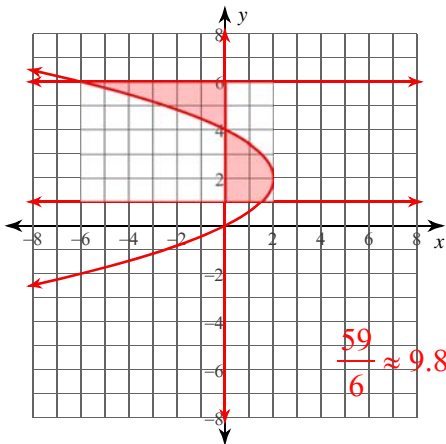
$x = -3$, $x = 0$

$\dfrac{23}{3} \approx 7.667$

6) $y = \dfrac{x^2}{2} + 3x + \dfrac{3}{2}$, $y = -x - 2$,

$x = -4$, $x = 1$

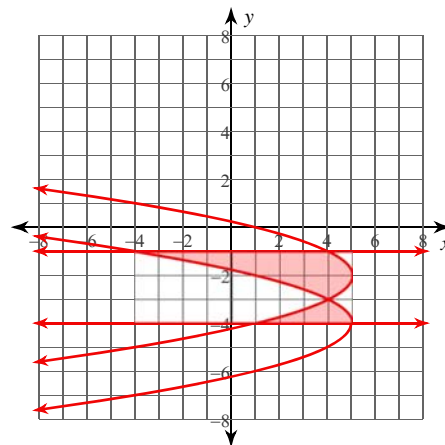$\dfrac{49}{3} \approx 16.333$

7) $x = -\dfrac{y^2}{2} + 2y$, $x = 0$,

$y = 1$, $y = 6$

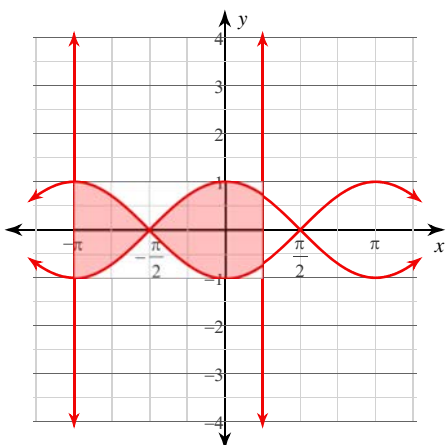

$\dfrac{59}{6} \approx 9.833$

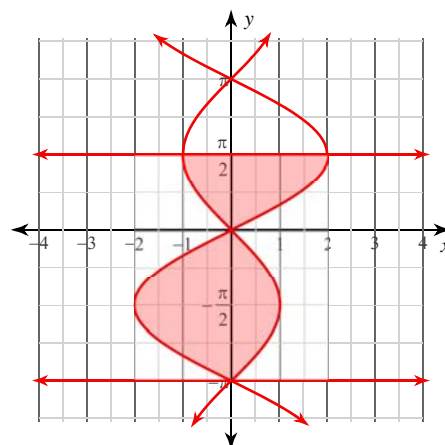8) $x = -y^2 - 8y - 11$, $x = -y^2 - 4y + 1$,

$y = -4$, $y = -1$

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9) $y = \cos x$, $y = -\cos x$,

$x = -\pi$, $x = \dfrac{\pi}{4}$

$4 + \sqrt{2} \approx 5.414$

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

$y = -\pi$, $y = \dfrac{\pi}{2}$

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