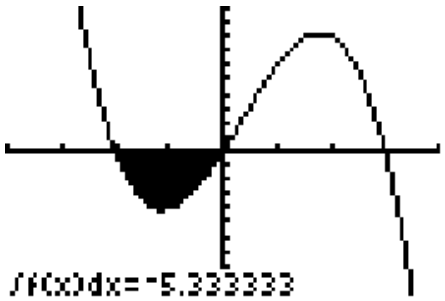
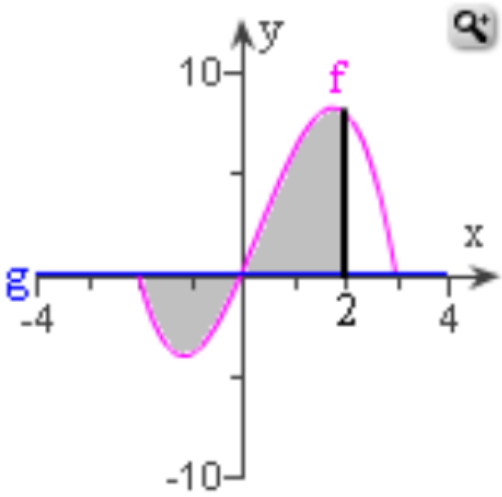
Find the area of the shaded region.

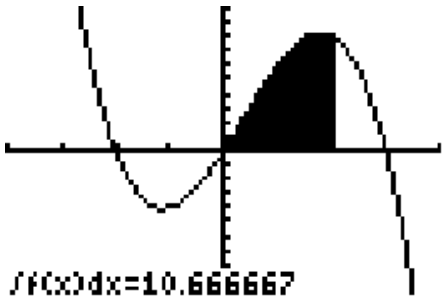
$f(x) = 6x + x^2 - x^3$, $g(x) = 0$





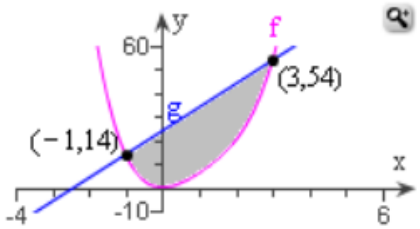
$\frac{16}{3} + \frac{32}{3} =$

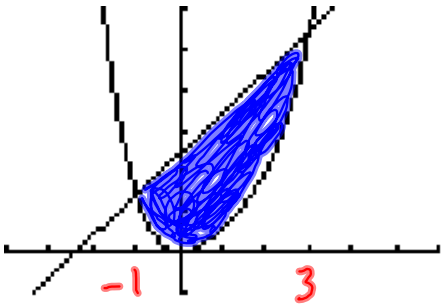
$\frac{48}{3} = 16$

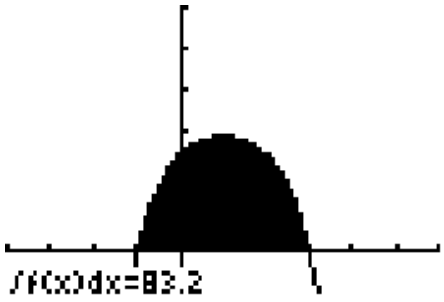


Find the area of the shaded region.

$f(x) = x^4 - 4x^3 + 9x^2$, $g(x) = 10x + 24$



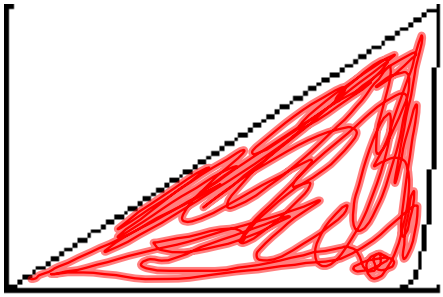




Area = 83.2

Find the area of the region bounded by the graphs of the given equations.

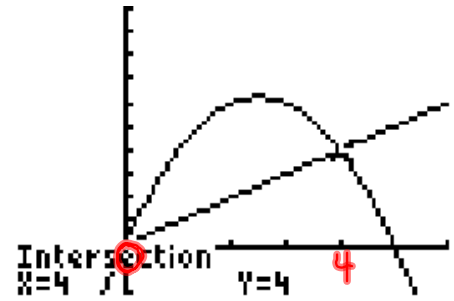
$y = x,\ y = x^5,\ x = 0,\ x = 1$



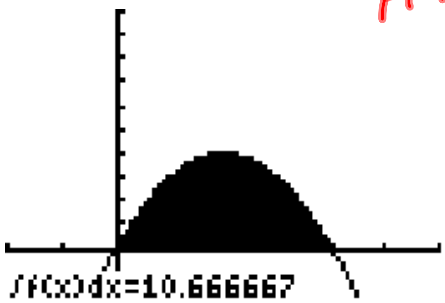
Area = $\frac{1}{3}$

Find the area of the region bounded by the graphs of the given equations.

$y = 5x - x^2,\ y = x$



Area = $10\frac{2}{3}$



Find the average value of the function $f(x) = 2x^3 - 5x + 1$ on $[-2, 5]$

$$y_{av} = \frac{1}{b-a}\int y\,dx$$

$$= \frac{1}{5-(-2)}\int_{-2}^{5}(2x^3 - 5x + 1)\,dx$$

$$= \frac{1}{7}\left[\frac{x^4}{2} - \frac{5x^2}{2} + x\right]_{-2}^{5}$$

$$= \frac{1}{7}\left[\left(\frac{625}{2} - \frac{125}{2} + 5\right) - \left(8 - 10 - 2\right)\right]$$

$$= \frac{1}{7}\left[\frac{625}{2} - \frac{125}{2} + \frac{10}{2} - \frac{16}{2} + \frac{20}{2} + \frac{4}{2}\right]$$

$$= \frac{1}{7}\left(\frac{518}{2}\right) = \frac{1}{7}(259) = \frac{259}{7}$$

$$= 37$$