For each of the two regions described below, sketch the region enclosed by the given curves. Decide whether to integrate with respect to x or y. Draw a typical approximating rectangle and label its height and width. Then find the area.

$$y = 2x + 3 \qquad y = 13 - x^2 \qquad x = -1 \qquad x = 2$$

$$x = 45 - 5y^2 \qquad x = 5y^2 - 45$$

Sketch the region enclosed by the given curves. Then find the area.

a)

$$x = 6y^2 \qquad x = 4 + 5y^2$$

b)

$$y = 6\cos(\pi x) \qquad y = 12x^2 - 3$$

Sketch the region enclosed by the given curves. Then find the area.

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$$x = 6y^2 \qquad x = 4 + 5y^2$$

b)

$$y = 6\cos(\pi x) \qquad y = 12x^2 - 3$$

c)

$$y = 4\cos(6x) \qquad y = 4\sin(12x) \qquad x = 0 \qquad x = \pi/12$$

d)

$$y = \sqrt{x} \qquad y = \frac{1}{2}x \qquad x = 25$$

Sketch the region enclosed by the given curves. Then find the area.

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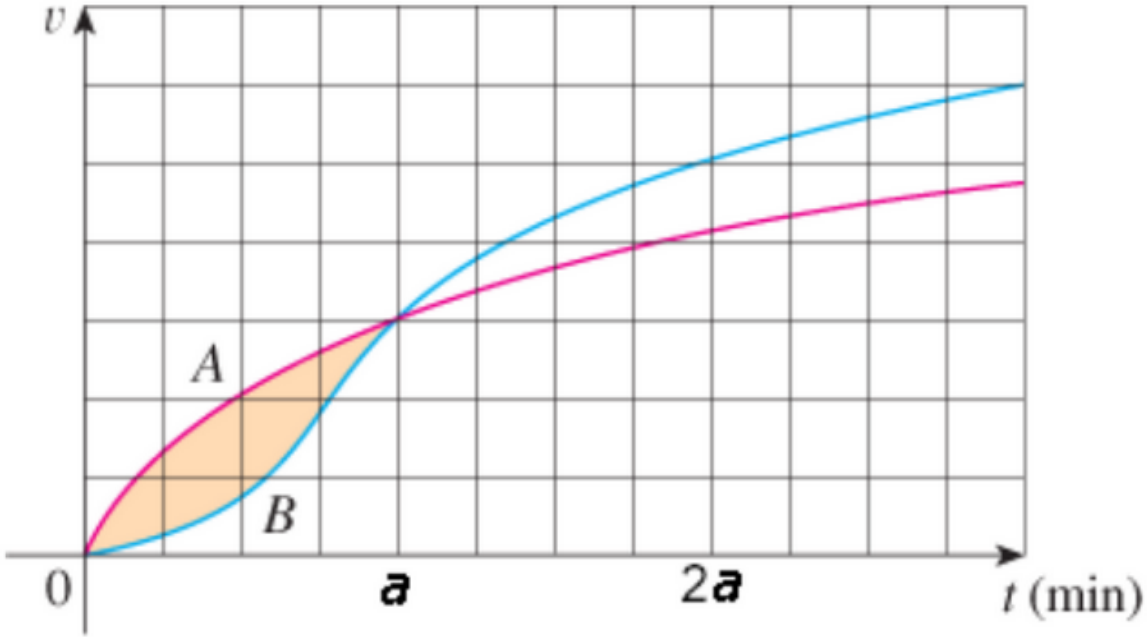
d)

$$y = \sqrt{x} \qquad y = \frac{1}{2}x \qquad x = 25$$

e)

$$y = |3x| \qquad y = x^2 - 4$$

Two cars, A and B, start side by side and accelerate from rest. The graphs of their velocity functions are given below.



a) Which car is ahead at time a? Explain.

b) Interpret the area of the shaded region in physical terms.

c) Which car is ahead after $1.5a$ minutes? Explain.

Find the number b such that the line $y = b$ divides the region bounded by the curves $y = 4x^2$ and $y = 16$ into two regions with equal area.