

1. A spherical balloon is inflated with gas at the rate of 100π ft³ per minute. In feet per minute, how fast is the radius increasing at the instant the radius is 5 feet. (*The volume of a sphere of radius r is given by $V = \frac{4}{3}\pi r^3$*)

A) 0

B) 1/4

C) 1/3

D) 1/2

E) 3/8

F) 5/8

G) 3/4

H) 1

I) 2

J) None of the above.

2. The length L of a rectangle is decreasing at 2 cm/sec while the width W is increasing at 2 cm/sec . When $L = 12 \text{ cm}$ and $W = 5 \text{ cm}$, how fast (in cm^2/sec) is the area changing?

A) -16

B) -14

C) -10

D) -6

E) 0

F) 6

G) 10

H) 14

I) 16

J) None of the above.

3. Let $y = 6 \sinh \frac{x}{3}$. Find $\left. \frac{dy}{dx} \right|_{x=0}$.

A) 0

B) $\frac{1}{4}$

C) $\frac{1}{3}$

D) $\frac{1}{2}$

E) $\frac{3}{8}$

F) $\frac{5}{8}$

G) $\frac{3}{4}$

H) 1

I) 2

J) None of the above.