



Lesson 6-4 Arc Length and Surface Area

- 1- approximate the length of the curve secant lines for $n = 2$.

$$y = x^4, 0 \leq x \leq 1$$

- A- 1.591
- B- 1.655
- C- 1.466
- D- 1.566

- 2- approximate the length of the curve secant lines for $n = 4$.

$$y = \cos x, 0 \leq x \leq \pi$$

- A- 4.791
- B- 3.790
- C- 3.724
- D- 3.972

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- 3- compute the arc length exactly.

$$y = 2x + 1, 0 \leq x \leq 2$$

- A- $2\sqrt{5}$
- B- $4\sqrt{5}$
- C- $2\sqrt{10}$
- D- $5\sqrt{2}$

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- 4- compute the arc length exactly.

$$y = 4x^{\frac{3}{2}} + 1, 1 \leq x \leq 2$$

- A- 6.8423
- B- 7.3824
- C- 7.4823
- D- 7.2824



5- compute the arc length exactly.

$$x = \frac{1}{8}y^4 + \frac{1}{4y^2}, -2 \leq y \leq -1$$

- A- 1.0625
- B- 3.0625
- C- 2.0625
- D- 2.6250

6- compute the arc length exactly.

$$x = e^{\frac{y}{2}} + e^{-\frac{y}{2}}, -1 \leq y \leq 1$$

- A- $\frac{2e - 2}{\sqrt{e}}$
- B- $\frac{2e - 2}{\sqrt{3}}$
- C- $\frac{2e - 1}{\sqrt{e}}$
- D- $\frac{e - 2}{\sqrt{e}}$

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7- compute the arc length exactly.

$$y = 2 \ln(4 - x^2), 0 \leq x \leq 1$$

- A- $\ln 9 - 2$
- B- $\ln 3 - 1$
- C- $\ln 9 - 1$
- D- $2 \ln 3 - 2$

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8- set up the integral for arc length and then approximate the integral with a numerical method. $y = x^3$, $-1 \leq x \leq 1$

A- $= \int_{-1}^1 \sqrt{1 + x^6} dx = 3.0957$

B- $= \int_{-1}^1 \sqrt{1 + 9x^2} dx = 3.0957$

C- $= \int_{-1}^1 \sqrt{1 + 3x^4} dx = 3.0957$

D- $= \int_{-1}^1 \sqrt{1 + 9x^4} dx = 3.0957$

9- set up the integral for arc length and then approximate the integral with a numerical method. $y = 2x - x^2$, $0 \leq x \leq 2$

A- $= \int_0^2 \sqrt{1 + (2 - x)^2} dx = 2.9578$

B- $= \int_0^2 \sqrt{1 + 4(1 - x)^2} dx = 2.9578$

C- $= \int_0^2 \sqrt{2 + 2(1 - x)^2} dx = 2.9578$

D- $= \int_0^2 \sqrt{2 + (2 - 2x)^2} dx = 2.9578$

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10- set up the integral for arc length and then approximate the integral with a numerical method. $y = \cos x$, $0 \leq x \leq \pi$

A- $= \int_0^\pi \sqrt{1 + \cos^2 x} dx = 3.8201$

B- $= \int_0^\pi \sqrt{1 + 2\sin^2 x} dx = 3.8201$

C- $= \int_0^\pi \sqrt{1 - \sin^2 x} dx = 3.8201$

D- $= \int_0^\pi \sqrt{1 + \sin^2 x} dx = 3.8201$