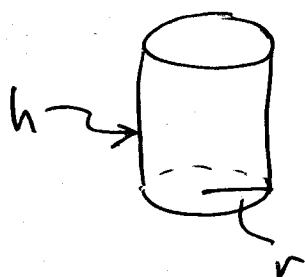


MATH 108 - QUIZ 2 - 2 FEBRUARY 2011

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (4 pts.) A closed cylindrical can has surface area 120π square inches. Express the volume of the can as a function of its radius. (Hint: The surface area S of a can with radius r and height h is $S = 2\pi rh$. The volume V of a can with radius r and height h is $V = \pi r^2 h$.)



$$V = \pi r^2 h$$

$$120\pi = 2\pi r h$$

$$V = \pi r^2 \left(\frac{60}{r}\right)$$

$$h = \frac{60}{r}$$

$$= 60\pi r //$$

2. (3 pts. each) Compute each of the following limits.

(a) $\lim_{x \rightarrow 2} x^3 + 4$.

$$\lim_{x \rightarrow 2} (x^3 + 4) = (2)^3 + 4 = 12 //$$

(b) $\lim_{x \rightarrow 3} \frac{x^2 - 2x - 3}{x - 3}$.

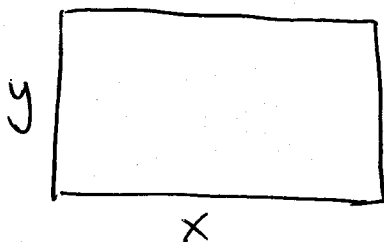
$$\lim_{x \rightarrow 3} \frac{x^2 - 2x - 3}{x - 3} = \lim_{x \rightarrow 3} \frac{(x+1)(x-3)}{\cancel{x-3}}$$

$$= \lim_{x \rightarrow 3} (x+1) = 4 //$$

MATH 108 - QUIZ 2 - 2 FEBRUARY 2011

Answer all of the following questions in the space provided. Show all work as partial credit may be given. Answers without justification, even if they are correct, will earn no credit.

1. (4 pts.) Suppose that a farmer wishes to fence off a rectangular garden of area 150 square feet. Express the total length of fencing used (in feet) as a function of the length of one of the sides of the garden.



L = total length of fencing

x = width of garden

y = length of Garden

$$L = 2x + 2y$$

$$= 2x + \frac{300}{x} //$$

$$xy = 150$$

$$y = \frac{150}{x}$$

2. (3 pts. each) Compute each of the following limits.

(a) $\lim_{x \rightarrow 3} x^2 - x + 1.$

$$\lim_{x \rightarrow 3} x^2 - x + 1 = (3)^2 - 3 + 1 = 7 //$$

(b) $\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2}$

$$\lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \lim_{x \rightarrow 2} \frac{(x+2)(\cancel{x-2})}{\cancel{x-2}} = \lim_{x \rightarrow 2} (x+2) = 4$$