

Almond 25 =  
 15, 16, 17, 17, 18, 18, 19, 19, 21  
 22 24 24 24 25 25 27 28  
 30 x x x

1. Find the following limits (show work,  $\pm\infty$  allowed):

$\bar{x} = 256/30$   
 $m = 26$

a.  $\lim_{x \rightarrow 3} (x^2 - 7x) = 3^2 - 7(3) = 9 - 21 = -12$

b.  $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x - 3} = \frac{(x-3)(x+3)}{x-3} = 6$

Some need calc

c.  $\lim_{x \rightarrow -3} \frac{x - 3}{(x + 3)^2} = -\infty$

$\frac{-6}{0} = -$

d.  $\lim_{x \rightarrow 0} \frac{\sin x \cos x}{x} = \lim_{x \rightarrow 0} \frac{\sin x}{x} \lim_{x \rightarrow 0} \cos x$

$= 1 \cdot 1 = 1$

all but 9

2. For what values of  $x$  is the function  $f$  not continuous?

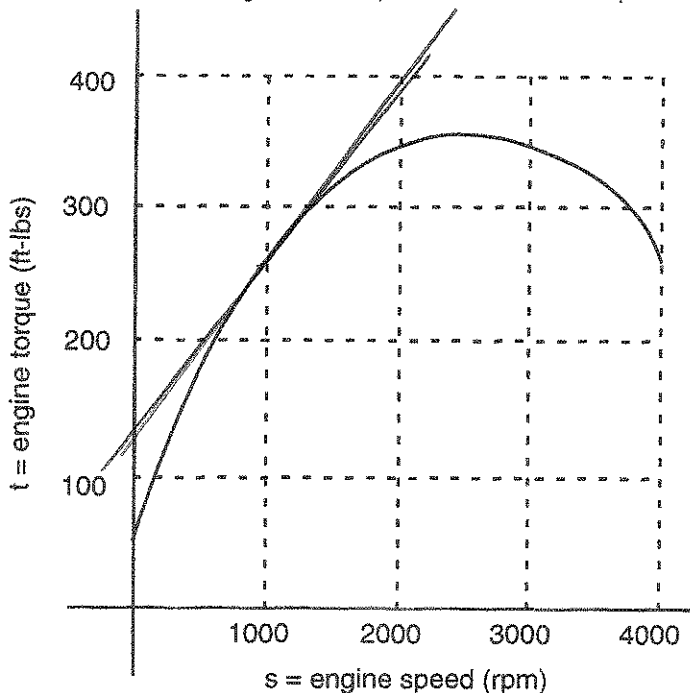
$f(x) = \frac{x - 4}{x^2 - 16}$

$\pm 4$

8 forgot 4

3. This is the graph of  $t =$  torque (twisting force, measured in ft-lbs) as a function of engine speed (revolutions per minute) for a gasoline engine.

- Estimate the rate of change of torque with respect to engine speed when the speed is 1000 rpm. Give units.
- At approximately what speed is the torque a maximum?



$(2000, 400)$

$(0, 130)$

$\frac{400 - 130}{2000 - 0} = \frac{270}{2000} =$

$113.5 \text{ ft-lbs/rpm}$

all but 8