

Name Key

Jan 2019 Regents

Review # 15

Due: Wed. 6/17/19

Work must be shown for each question in order to receive credit.

17. $f(x) = a^x, a > 1$
Inverse of an exponential
is a logarithm with the
same base.

$$3) f^{-1}(x) = \log_a x$$

3 4

18. Compounded monthly:
 $f(t) = 10,000(1 + \frac{.009}{12})^{12t}$
 $= 10,000(1.00075)^{12t}$
Compounded continuously: $f(t) = 10,000 e^{.009t}$ add
log.

$$19. x^2 + 2x + 1 = 0$$

$$(x+1)(x+1) = 0$$

$$x = -1 \mid x = -1$$

$\therefore$ Tangent at $x = -1$

1 3

20. Half Life is exponential decay.
Use exponential regression to
get $y = 278(.5)^x$

$$\frac{18 \text{ hours}}{1.8} = 10 \text{ half lives}$$

$$y = 278(.5)^{10} = 0.271$$

$$21. \frac{x^2 - 4x}{2x}$$

OR
STORE

$$= \frac{x^2}{2x} - \frac{4x}{2x} = \frac{x}{2} - 2 \text{ I.}$$

$$\frac{x(x-4)}{2x} = \frac{x-4}{2} \text{ II.}$$

$$= \frac{x-1}{2} - \frac{3}{2} \text{ III.}$$

4 4

$$22. \text{max of } p(x) = 5$$

$$\text{min of } f(x) = -.75$$

$$y = 4x^2 + 6x - 3$$

Diff

$\frac{1}{2}$ 2nd trace - 3. minimum

23.

Want who will be enrolled
(1SD or below)

$$z = 1$$

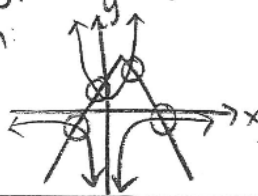
$$?nb = \text{normalcdf}(-100, 1) = .841$$

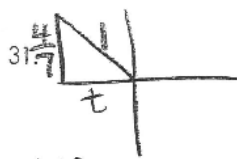
$$750(.841) = 631$$

1 4

$$24. \frac{1}{1-x^2} = -\frac{1}{3x-2} + 5$$

Graph:





Unit 0
 $(x, y) = (\cos(\theta), \sin(\theta))$

$$\left(\frac{4}{7}\right)^2 + t^2 = 1$$

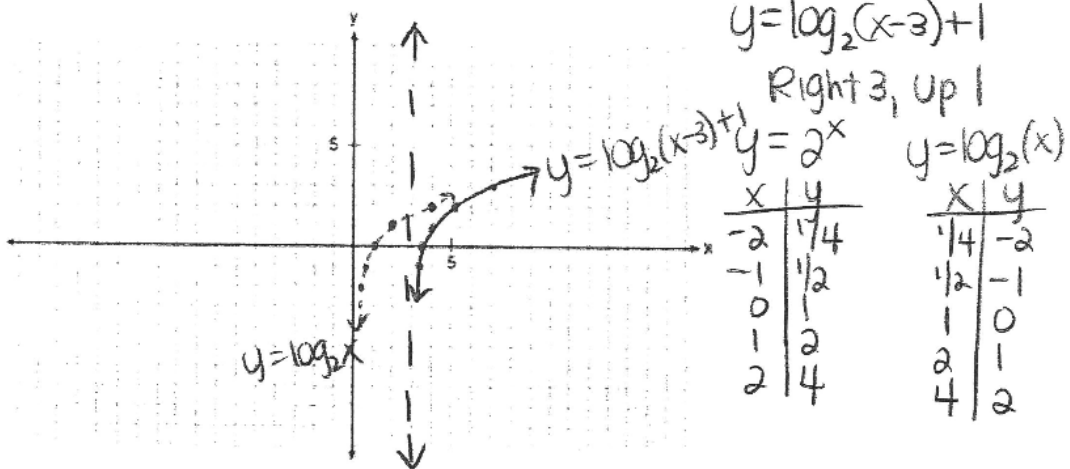
$$\frac{16}{49} + t^2 = 1$$

$$t^2 = \frac{33}{49}$$

$$t = \pm \frac{\sqrt{33}}{7}$$

$$t = -\frac{\sqrt{33}}{7} \quad (-x\text{-value in 2nd Quad.})$$

32.



37. $A(t) = 318,000(1.07)^t$
 $A(t) = 318,000(1.07)^t$

$$\frac{1,000,000}{318,000} = \frac{318,000(1.07)^t}{318,000}$$

$$\frac{500}{159} = 1.07^t$$

$$\frac{\log \frac{500}{159}}{\log 1.07} = \frac{t \log 1.07}{\log 1.07}$$

$$16.93 = t$$

17 years

