

MTH 112

TUESDAY 11-6-12

CLASS NOTES

Pg 491

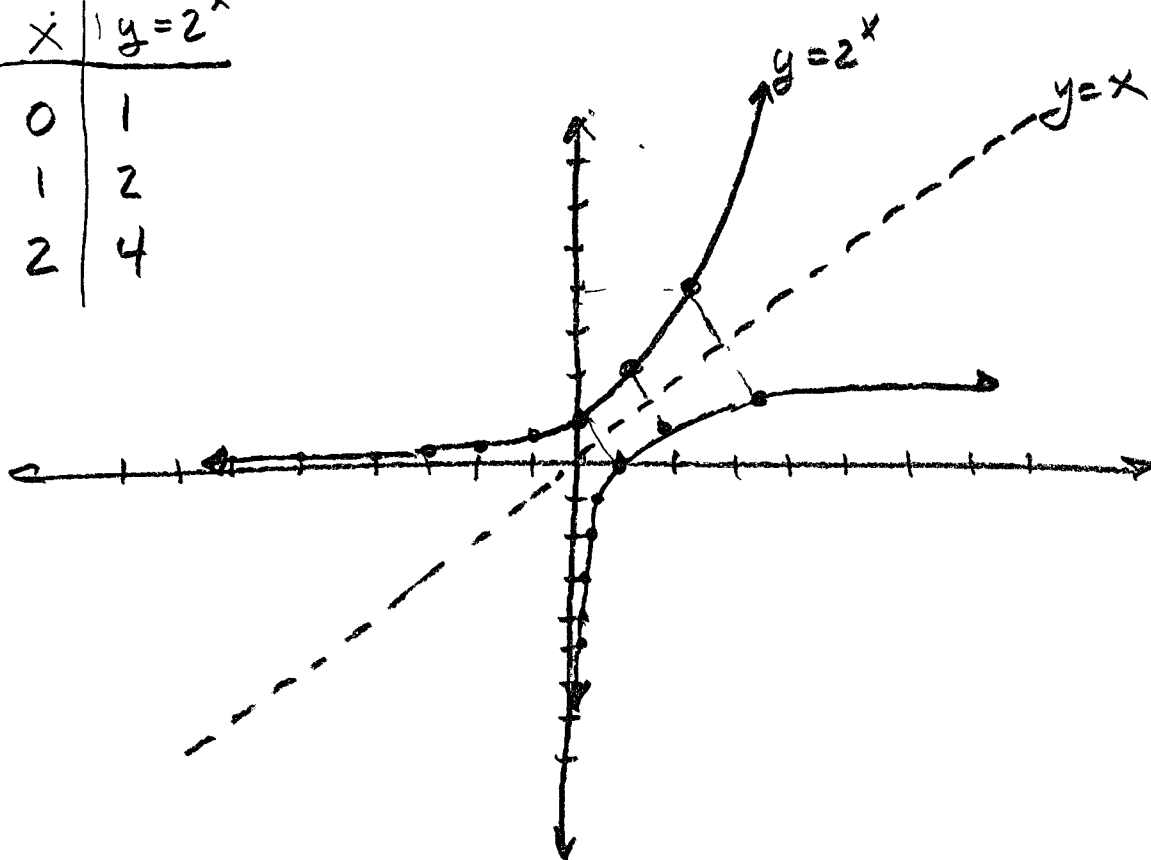
① graph $f(x) = \log_2 x$ using $y = 2^x$

$f^{-1}(x)$

$f(x)$

$f^{-1}(x)$

x	$y = 2^x$
0	1
1	2
2	4



Worksheet

$$(37) \log_6 X - \log_6 (X-4) = \log_6 35$$

$$\log_6 \left(\frac{X}{X-4} \right) - \log_6 35 = 0$$

$$\log_6 \left(\frac{X}{35(X-4)} \right) = 0$$

$$\log_6 \left(\frac{X}{35X-140} \right) = 0$$

$$6^0 = \frac{X}{(35X-140)}$$

$$35X - 140 = X$$

$$\frac{34X}{34} = \frac{140}{34}$$

$$\boxed{X = \frac{70}{17}}$$

$$\underline{\text{CK}} \quad \log_6 \left(\frac{70}{17} \right) - \log_6 \left(\frac{70}{17} - \frac{68}{17} \right) \stackrel{?}{=} \log_6 35$$

$$\log_6 \left(\frac{\frac{70}{17}}{\frac{2}{17}} \right) \stackrel{?}{=} \log_6 35 \checkmark$$

EX Changing $y = b^x$ to a
more general $y = y_0(1 \pm r)^x$
 $P = P_0(1 \pm r)^t$

Pop in 2000 was 250,000

Pop in 2012 was 286,000

$$\text{Pop-Change} = \frac{36,000}{12} = 3000 \text{ per year}$$

$$\frac{3000}{250,000}$$

Predict Pop in 2020

$$\frac{3}{250} = \frac{12}{1000}$$

$$r = .012$$

1.2% ↑
per year

$$\text{Let } P_0 = 286,000$$

$$t = 0 = 2012$$

$$r = .012$$

$$P(t) = P_0(1+r)^t$$

$$P(t) = 286000(1.012)^8$$

$$= 286000(1.100130234)$$

$$= 314,637.2468$$

$$P(t) = 314,637 \text{ people}$$