1. B
2. C
3. C
4. C
5. B
6. A

x	-1	0	1	2
y	81	27	9	3

÷3 (1/3)

y-intercept

$y = 27(\ \ )$

7. $5^{2x+1} = 125^{3x}$

$5^{2x+1} = (5^3)^{3x}$

$5^{2x+1} = 5^{9x}$

$2x+1 = 9x$

$1 = 9x - 2x$

$1 = 7x$

$\frac{1}{7} = \frac{7x}{7}$

$\frac{1}{7} = x$

8. $2^{3x} = \sqrt{4}^{x+1}$

$2^{3x} = 2^{x+1}$

$3x = x+1$

$3x - x = 1$

$2x = 1$

$x = \frac{1}{2}$

$2^{3x} = (4^{1/2})^{x+1}$

$2^{3x} = 4^{1/2x+1/2}$

$2^{3x} = (2^2)^{1/2x+1/2}$

$2^{3x} = 2^{x+1}$

9) $81 = 3^{-3(x+2)}$

$3^4 = 3^{-3x-6}$

$4 = -3x-6$

$4+6 = -3x$

$10 = -3x$

$\frac{10}{-3} = \frac{-3x}{-3}$

$-\frac{10}{3} = x$

Section 2

1. A) $(0, 5)$

B) $Q2 \rightarrow Q1$

C) $x \in R$

D) $y > 0$

E) decreasing

F) $0 < b < 1$

2A) $\frac{2(3)^x}{2} = \frac{54}{2}$

$3^x = 27$

$3^x = 3^3$

$x = 3$

B) $2^{x+1} = \sqrt{32}$

$2^{x+1} = 32^{1/2}$

$2^{x+1} = (2^5)^{1/2}$

$2^{x+1} = 2^{5/2}$

$x + 1 = \frac{5}{2}$

$x = \frac{5}{2} - 1$

$= \frac{5}{2} - \frac{2}{2} = \frac{3}{2}$

C) $25^{x-3} = \frac{1}{125}$

$25^{x-3} = 125^{-1}$

$(5^2)^{x-3} = (5^3)^{-1}$

$5^{2x-6} = 5^{-3}$

$2x - 6 = -3$

$2x = 3$

$x = 3/2$

D) $\frac{2\left(\frac{1}{3}\right)^{2x}}{2} = \frac{18}{2}$

$\frac{1}{3}^{2x} = 9$

$(3^{-1})^{2x} = 3^2$

$3^{-2x} = 3^2$

$\frac{-2x}{-2} = \frac{2}{-2}$

$x = -1$