8)

a. $59_{10} = 111011_2$

b. $521_{10} = 1000001001_2$

c. $127_{10} = 1111111_2$

4.
a) 4.000
b) 0.250
c) 2.585
d) 0.000
e) 5.000
f) -1.000

5.
a) $\log_2(AB) = \log_2(A) + \log_2(B)$
b) $= \log_2(1) - \log_2(A)$
c) $= \log_2(1) = 0$
d) $\log_2(2^x) = x$
e) $2^{\log_2(A)} = A$

6.
a) $\log_2(x) - \log_2(y)$

b) $\log_2(5) + \log_2(x) - \log_2(3) - \log_2(y)$

c) $6\log_2(x)$

d) $\frac{\log_2(x)}{\log_2(4)}$

7. a) $(1 \cdot 2^1) + (0 \cdot 2^0) = 2$

b) $(1 \cdot 2^2) + (1 \cdot 2^1) + (0) = 6$

c) $(1 \cdot 2^5) + (1 \cdot 2^4) + (0) + (0) + (1 \cdot 2^1) + (1) = 51$

d) $2^4 + 2^3 + 2^2 + 2^1 + 2^0 = 31$

e) $2^4 + 0 + 2^3 + 2^1 = 22$

1.
a. 100
b. 120
c. 105
d. 90
e. 54
f. 130
g. 4095
h. 4094

2.
a. $P(x) = 5x^4 + 3x^3 + 2x$

$a_0 = 0$
$a_1 = 2$
$a_3 = 3$

b. $P(x) = 5x^6 + 3x + 10$

$a_0 = 10 \quad a_1 = 3$
$a_3 = 0$

c. $P(x) = 6 \quad a_0 = 5 \quad a_1 = 0 \quad a_3 = 0$

d. $P(x) = 2x + 1 \quad a_0 = 1 \quad a_1 = 2 \quad a_3 = 0$

3.
a) 2^{x+y} b) 2^{xy} c) 1 d) $\frac{1}{2^x}$ e) $\sqrt[y]{2}$