Name: $\qquad$

1. Approximate by using the change of base formula. Include at least 3 decimals in your answer.
a) $\log _{8}(63) \approx$
b) $\log _{5}(17) \approx$
c) $\log _{23}(11) \approx$
d) $\log _{6.6}(66) \approx$
e) $\log _{0.5}(3) \approx$
2. Solve the equation

$$
4^{5 x+13}=6^{7-8 x}
$$

3. Solve the equation

$$
\left(e^{x}\right)^{2}-8 e^{x}+\frac{48}{4}=0
$$

4. Solve the compound interest formula for $t$ using only natural logarithms:

$$
A=P\left(1+\frac{r}{n}\right)^{n t}
$$

5. Solve the equation

$$
e^{x}-40 e^{-x}=-6
$$

