Name:

3.2.0 Exponent and Log Review

Properties of Exponents:

1. $a^n a^m =$_____
2. $\dfrac{a^n}{a^m} =$_____
3. $(a^n)^m =$_____
4. $(ab)^n =$_____
5. $\left(\dfrac{a}{b}\right)^n =$_____
6. $a^0 =$_____
7. $a^{-n} =$_____
8. $a^{\frac{1}{n}} =$_____
9. $a^{\frac{m}{n}} =$_____

Logarithms:
If $\log_a x = y$, ...

Facts about Logarithms:

1. $\log x$ is ...
2. $\ln x$ is ...
3. $\log_a(a^x) =$
4. $a^{\log_a x} =$
5. $\log_a(nm) =$
6. $\log_a(\frac{n}{m}) =$
7. $\log_a(n^t) =$
8. $\log_a 1 =$
9. $\log_a a =$

1. Simplify the following expressions.

   (a) $\left(\dfrac{5a^0b^3}{a^3b^{-2}}\right)^{-2}$

   (b) $\ln\left(e^2\right)$

   (c) $\log_2\left(\dfrac{1}{8}\right)$

   (d) $\sqrt{t}(t^2 - 3t + 2)$

   (e) $\dfrac{x^3y^{-1} + x}{\sqrt{x^3}}$

   (f) $2c^{-1}(c^2 + c) - 2$

2. Solve the following equations for x.

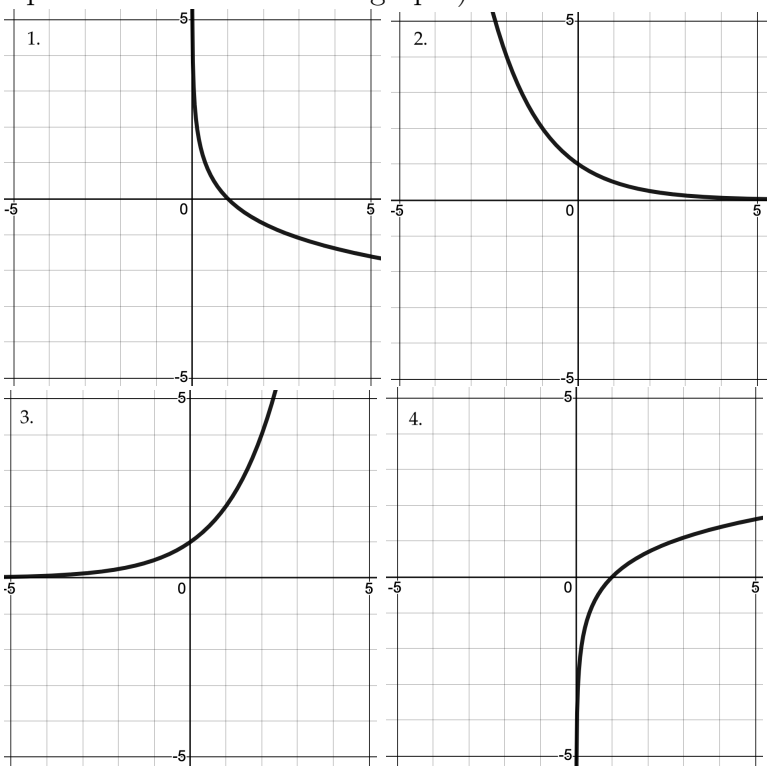
(a) $\log\left(3x^3\right) = 2$

(c) $7 \cdot 2^x = 2 \cdot 3^x$

(b) $15e^{(3x+5)} = 5$

(d) $25x^5 = 100$

3. Match the graph on the left to the function equation on the right. (Yes, multiple equations match the same graph.)



a) $f(x) = 2^x$

b) $g(x) = 2^{-x}$

c) $h(x) = \left(\frac{1}{2}\right)^x$

d) $k(x) = \ln(x)$

e) $m(x) = -\ln(x)$