

3.2-3.3 Re-Teach Worksheet

Name Key

Intermediate Algebra

3.2 I can use tables and graphs to solve exponential equations including real-world situations and translate between representations.

3.3 I can evaluate exponential functions in the form $y = ab^x$ and relate the meaning of the context of a real-world situation.

Use the following exponential functions to answer questions 1-4.

$$f(x) = 5^x$$

$$g(x) = 3 \cdot 3^{x+1}$$

$$h(x) = 7 \left(\frac{1}{3}\right)^{x-1}$$

1. Find $f(6)$

$$x=6 \quad 5^6 = \boxed{15625}$$

3. Find x if $f(x) = 3$

$$f(x)=y=3 \quad 3 = 5^x \quad x = .6826$$

use calc

2. Find $g(-1)$

$$x=-1 \quad 3 \cdot 3^{x+1} = 3 \cdot 3^{-1+1} = 3 \cdot 1 = \boxed{3}$$

4. Find $h(3)$

$$7 \left(\frac{1}{3}\right)^{3-1} = 7 \cdot \frac{1}{9} = \overline{777}$$

5. Use your graphing calculator to solve the following problems.

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

$$5.63$$

b) $4^{x-2} = 18$

$$4.08$$

6. The table below shows the amount of money in your savings account. You earn 3% interest annually. Use the table below to answer the following questions:

Years	Savings Account
0	\$800
5	\$927.42
10	\$1,075.13
15	\$1,246.37
20	\$1,444.89
25	\$1,675.02

a) How much did you originally deposit?

$$800$$

b) About how long does it take to earn \$275 from interest?

$$10 \text{ years}$$

c) After how many years will you have \$1,500 in your account?

$$20 \text{ years}$$

d) How much money have you **earned** from interest after 20 years?

$$\$644.89$$

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7. The Cherry and The Spoon is a very popular place to visit in Minneapolis. This sculpture is worth \$4500 and appreciating at a rate of 6.5% a year. The Cherry and The Spoon's value can be modeled by $f(x) = 4500(1.065)^x$

- a. What is the value of The Cherry and The Spoon after 12 years?

$$4500(1.065)^{12} = 9580.9$$

- b. Find how many years until The Cherry and The Spoon is worth at least \$16,000.

$$16,000 = 4500(1.065)^x \Rightarrow 21 \text{ years}$$

use calc

8. Rachel just put \$3000 into a savings account that pays 7% interest each year. This situation can be modeled by the equation $f(t) = 3000(1 + .07)^t$.

- a. How much does Rachel have in his account after 11 years?

$$3000(1 + .07)^{11} = 6314.6$$

- b. Rachel needs \$20,000 in his account before she can think about buying a second home on a lake in northern Minnesota. How long does Rachel need to wait in order to look for her second home on the lake.

$$20,000 = 3000(1 + .07)^t \Rightarrow 29 \text{ years}$$

9. Use the graph to find the solutions to $\frac{1}{4}^x = 16$

Solution: $x = -2$

Check:

$$\left(\frac{1}{4}\right)^{-2} = 16$$

$$16 = 16$$

