

Algebra: Change of Base Formula

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DIRECTIONS

Use Change of Base: $\log_b(x) = \frac{\log(x)}{\log(b)}$. Round answers to 4 decimal places.

1 Solve for x using Change of Base:

$$3^x = 100$$

Answer: _____

2 Use Change of Base Formula to evaluate:

$$\log_5 32$$

Answer: _____

3 Use Change of Base Formula to evaluate:

$$\log_7 8$$

Answer: _____

4 Solve for x using Change of Base:

$$5^x = 20$$

Answer: _____

5 Use Change of Base Formula to evaluate:

$$\log_3 9$$

Answer: _____

6 Solve for x using Change of Base:

$$3^x = 15$$

Answer: _____

7 Solve for x using Change of Base:

$$2^x = 15$$

Answer: _____

8 Use Change of Base Formula to evaluate:

$$\log_5 8$$

Answer: _____

9 Use Change of Base Formula to evaluate:

$$\log_2 25$$

Answer: _____

10 Solve for x using Change of Base:

$$2^x = 11$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES Change of Base works with any base — log or ln both work. Great bridge to calculator use.

1 Solve for x using Change of Base:

$$= x = \frac{\log 100}{\log 3} \approx 4.1918$$

$$3^x = 100$$

2 Use Change of Base Formula to evaluate:

$$= \frac{\ln 32}{\ln 5} \approx 2.1534$$

$$\log_5 32$$

3 Use Change of Base Formula to evaluate:

$$= \frac{\ln 8}{\ln 7} \approx 1.0686$$

$$\log_7 8$$

4 Solve for x using Change of Base:

$$= x = \frac{\log 20}{\log 5} \approx 1.8614$$

$$5^x = 20$$

5 Use Change of Base Formula to evaluate:

$$= \frac{\ln 9}{\ln 3} \approx 2.0$$

$$\log_3 9$$

6 Solve for x using Change of Base:

$$= x = \frac{\log 15}{\log 3} \approx 2.465$$

$$3^x = 15$$

7 Solve for x using Change of Base:

$$= x = \frac{\log 15}{\log 2} \approx 3.9069$$

$$2^x = 15$$

8 Use Change of Base Formula to evaluate:

$$= \frac{\ln 8}{\ln 5} \approx 1.292$$

$$\log_5 8$$

9 Use Change of Base Formula to evaluate:

$$= \frac{\ln 25}{\ln 2} \approx 4.6439$$

$$\log_2 25$$

10 Solve for x using Change of Base:

$$= x = \frac{\log 11}{\log 2} \approx 3.4594$$

$$2^x = 11$$