

Handout 2: Graphin' it up! - Answers

Graphing will be helpful with these problems. For answers involving where functions meet, the answers can be approximate.

1. What are the domain and range of $y = 3^x - 5$?

Domain: all real numbers. Range: $y > -5$

2. What are the domain and range of $y = \log_4 4x^2$?

Domain: $x > 0$. Range: All real numbers.

3. What are the domain and range of $y + 4 = \log_1 0x + 3$?

Domain: $x > -3$. Range: All real numbers

4. What are the domain and range of $y = -3(4^x)$?

Domain: all real numbers. Range: $y < 0$.

5. When will the exponential function $y = 5^x$ equal the linear function $y = 12x$?

At $x \approx 0.1$ and $x \approx 2$.

6. When will the exponential function $y = 5^x$ equal the linear function $y = 3x$?

Never.

7. When will the logarithmic function $y = \log x^5$ equal the linear function $y = 2x$?

Never.

8. When will the exponential function $y = e^x$ equal the logarithmic function $y = \ln x$?

Never. These functions are inverses of one another!

9. Does the exponential function $y = \frac{2}{3}^x$ grow or decay exponentially?

Decay, because $\frac{2}{3}$ is a positive number less than 1.

10. Does the exponential function $y = 3e^{\frac{1}{2}x}$ grow or decay exponentially?

Grow, because e is a positive number greater than 1.

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