

Name: _____

Exponential Functions

1) Graph each exponential function, then state the y-intercept

1) $y = 2^x$

2) $y = 2^x - 3$

3) $y = 3^x - 3$

4) $y = 2^x + 3$

5) $y = 4^{3x} - 2$

6) $y = 3^{3x} - 2$

7) $y = 5^x$

8) $y = 2^{4x} + 1$

9) $y = 5^{x-1} + 3$

10) $y = 5^x - 2$

2) Sketch the graphs of $y = 2^x$ and $y = 2^{-x}$ in the same coordinate system

3) Sketch the graphs of $y = 2^x$, $y = 5^x$ and $y = 3^x$ in the same coordinate system

4) Sketch the graphs of the following functions: $y = 2^x + 4$ $y = 2^{x-4}$ $y = -2^x$ $y = -2^{-x}$

5) Simplify the following expressions (i.e., reduce to a single exponential function.)

1) $4^{x+6} \cdot 8^{2-x}$

2) $\frac{27^{2x-3}}{9^{x-4}}$

3) $(2^x)^3 \cdot (4^{2-x})^4$

6) Simplify the following expressions (i.e., reduce to a single exponential function.)

1) $5^{x-2} \cdot 25^{3-x}$

2) $3^{x-1} \cdot 9^{x-2} \cdot 27^{x+3}$

3) $7^{2x-1} \cdot 49^{3x-5} \cdot 243^{4x+9}$

4) $\frac{8^{x+5}}{16^{x-2}}$

5) $16 \cdot 0.2^{-4}$

6) $\frac{(0.5 \cdot 10)^{-3}}{16 \cdot 0.1^4}$

7) $-32 \cdot \left(\frac{1}{2}\right)^4$

7) 1) Simplify $10 \cdot 100^2 \cdot 1000^4$ by reducing to a single exponential function

2) Reduce $3^7 + 6 \cdot 3^6$ to a single term

3) Reduce $9 \cdot 27^3 + 2 \cdot 3^{11}$ to a single term

4) Simplify $\frac{36^{n+3}}{6^{2n+5}}$ by reducing to a single exponential function