

Meet the Parent Functions Name _____ Period _____

Linear	Quadratic	Cubic	Quartic	Quintic	...
$y = x$	$y = x^2$	$y = x^3$	$y = x^4$	$y = x^5$	$y = x^{99}$
$y = -x$	$y = -x^2$	$y = -x^3$	$y = -x^4$	$y = -x^5$	$y = -x^{98}$

Get a calculator and graph each

What do all functions with Odd exponents have in common?

Even?

Which is greater (<, >) when x is large?

a. $x^2 + 5$ $x^3 + 2$

b. $11x^5 + 9x^4 + 7x^3 + 34$ x^6

c. 6^x x^6

Other Functions:

Absolute Value $y = x $	Square Root $y = \sqrt{x}$	Cube Root $y = \sqrt[3]{x}$	Exponential $y = 2^x$	Logarithmic $y = \log_2 x$	Rational $y = 1/x$

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opp

Opposite directions

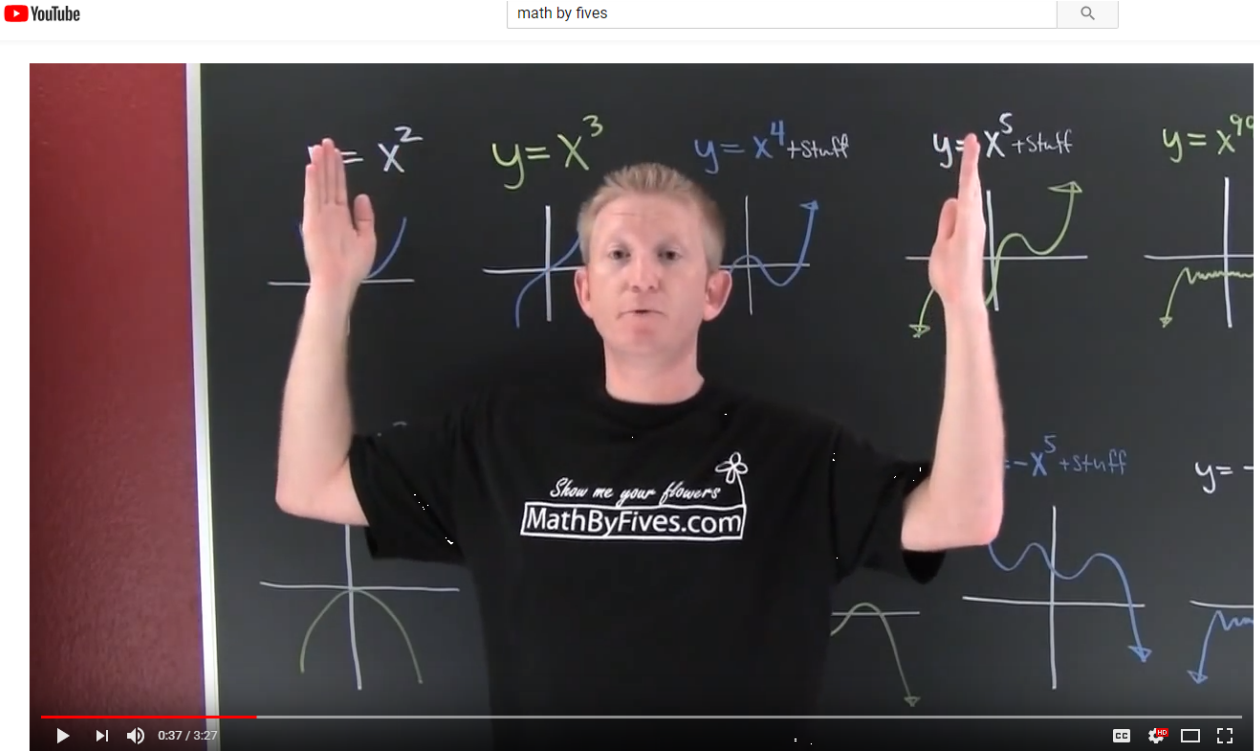
Same direction

powers of 2, make "U"

1000^5 < 1000^2 + 2

6^1000 > 1000^6

Watched "End Behavior" Video

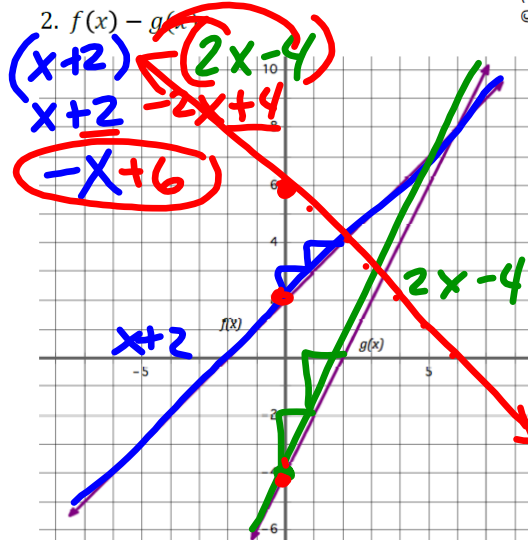
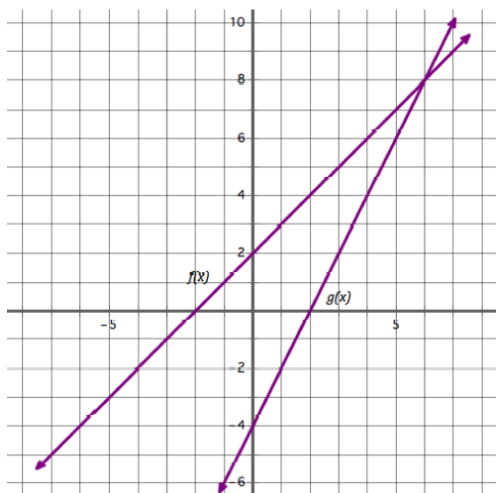


Polynomial End Behavior

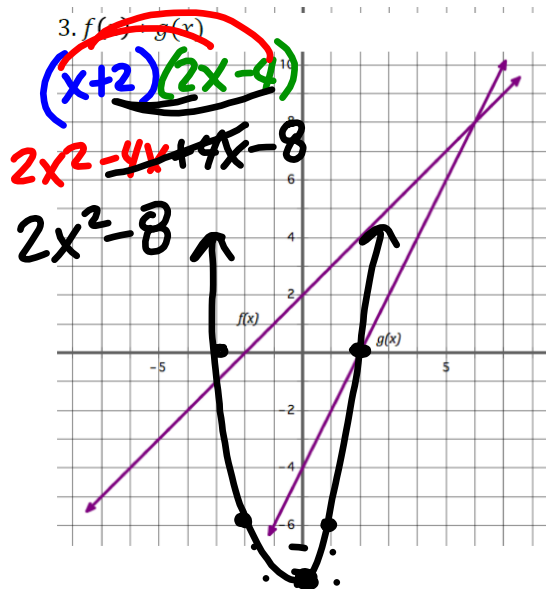
Ready

Topic: Combining polynomial functions graphically.
Use the graphs of $f(x)$ and $g(x)$ to sketch the graph of the following:

1. $f(x) + g(x)$



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Polynomial Functions 9
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8.50 x 11.00 in

Set

Topic: Order the following numbers from least to greatest.

4. 100^3 $\sqrt{100}$ $\log_2 100$ 100
5. 2^{-1} $\sqrt{100}$ $\log_2 \left(\frac{1}{8}\right)$ 0
6. 2^0 $\sqrt{16}$ $\log_2 8$ 2

Which is greater? For each problem, make a true statement by placing the appropriate inequality symbol between the two expressions. (Hint: think about what you know about the expression and the end behavior as well as rates of change of a function instead of plugging in values).

If $x < -100$, then:

7. x^2 2^x

8. x^5 x^2

9. x^2 x^3

If $x > 100$, then:

10. x^2 2^x

11. x^5 x^2

12. x^2 x^3

8.50 x 11.00 in

Go

Simplify each polynomial expression. **combine like terms**

13. $x^5 + 3x^2 + 4x^4 + 3x^5 - x^3 + 3$

14. $x^3 - 4x^2 + 4x^3 + 3x^2 - x + 6$

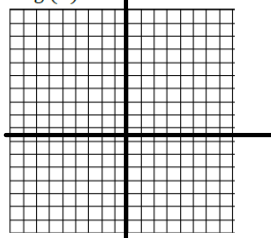
15. $(3x^2 + 4x) + (x^2 - 5)$

16. $x^3 - 4x^2 + 4x^3 + 3x^2 - x + 6$

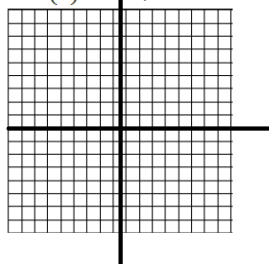
8.50 x 11.00 in

Topic: Graph the following functions.

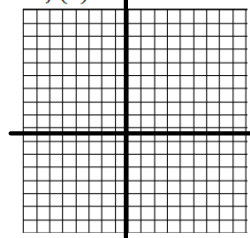
17. $g(x) = x + 2$



18. $h(x) = x^2 + 2$

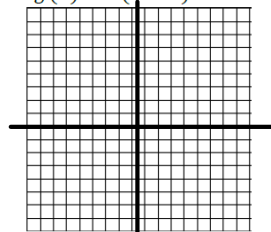


19. $f(x) = 2^x + 2$

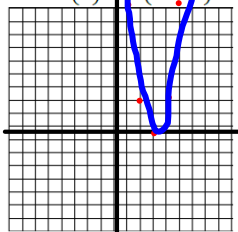


up 2

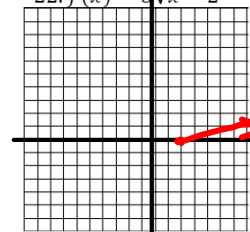
20. $g(x) = 3(x - 2)$



21. $h(x) = 3(x - 2)^2$

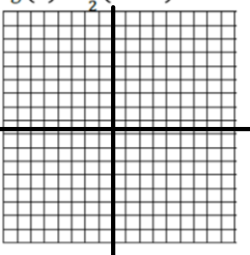


22. $f(x) = 3\sqrt{x - 2}$

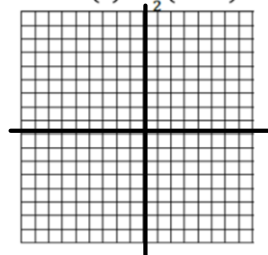


right 2,
steep

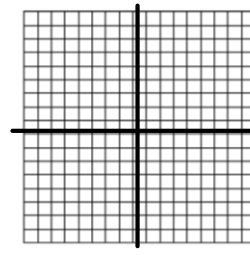
23. $g(x) = \frac{1}{2}(x - 1) - 2$



24. $h(x) = \frac{1}{2}(x - 1)^2 - 2$



25. $f(x) = |x - 1| - 2$



right 1,
down 2,
1/2
steep

8.51