

4.8 Classwork: Quadratics review, exponents

1. Let $y = x^2 - 5x + 4$ and $2x + y = 4$

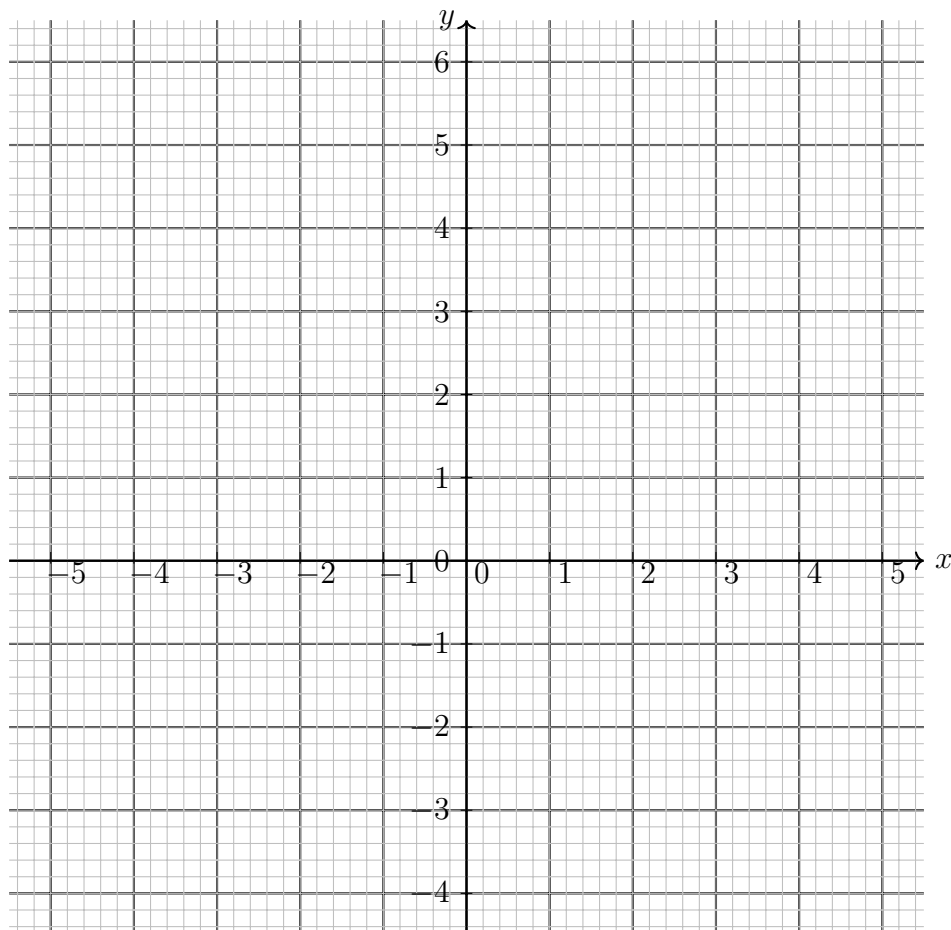
(a) Rewrite quadratic in vertex form and state the vertex as an ordered pair.

(b) Factor the quadratic function and write down its roots.

(c) Graph the parabola, labeling it. Mark the intercepts and graph the axis of symmetry as a dotted line, labeling it with its equation.

(d) Graph linear equation and label it with its name or equation.

(e) Mark the intersections of the two equations as ordered pairs.



Simplify, leaving no negative or fractional exponents.

2. $2x^{-3}y \times \frac{1}{4}x^2y^{-1}$

3. $a^{\frac{3}{4}} \times \left(\frac{\sqrt{a}}{b^4}\right)^{\frac{1}{2}}$

4. $\ln e^4$

5. $\log 5^2 + \log 4$

6. $(2x^2 - x - 5)(x - 3) - (x^2 + 3x - 5)(2x - 3)$

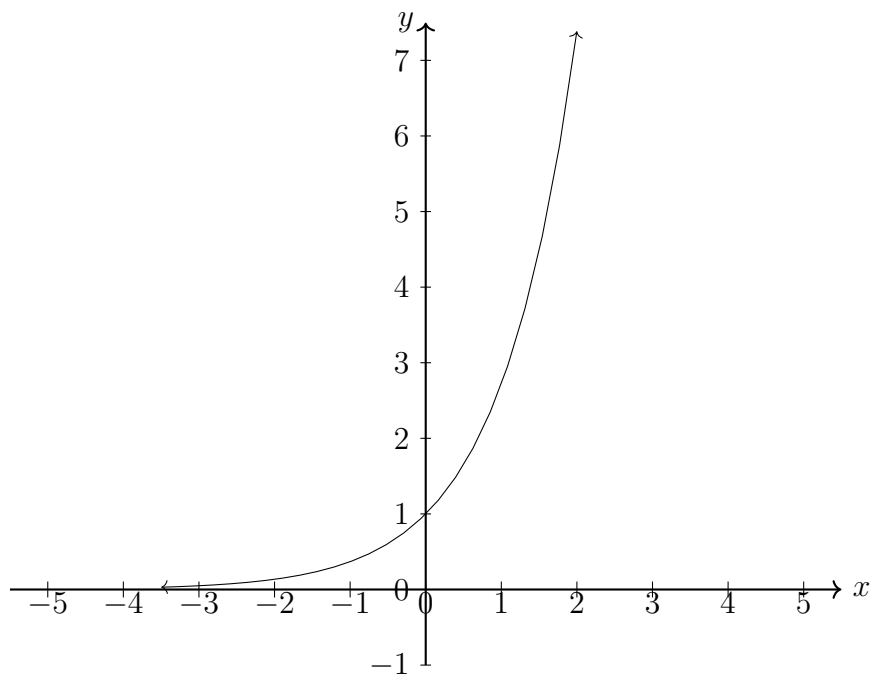
7. Factor the expression and then solve for x : $2x^3 - 2x^2 - 24x = 0$

8. Let $f(x) = 2x - 5$ and $g(x) = (x - 1)^2$

(a) Find $(f \circ g)(x)$

(b) Find $f^{-1}(x)$

9. The function $f(x) = e^x$ is shown on the graph. Sketch $g(x) = f(x - 2) + 3$. Plot and label the asymptote(s).



10. The universal set U is defined as the set of positive integers less than 13. The subsets A and B are defined as follows:

$A = \{\text{integers that are multiples of 3}\}$

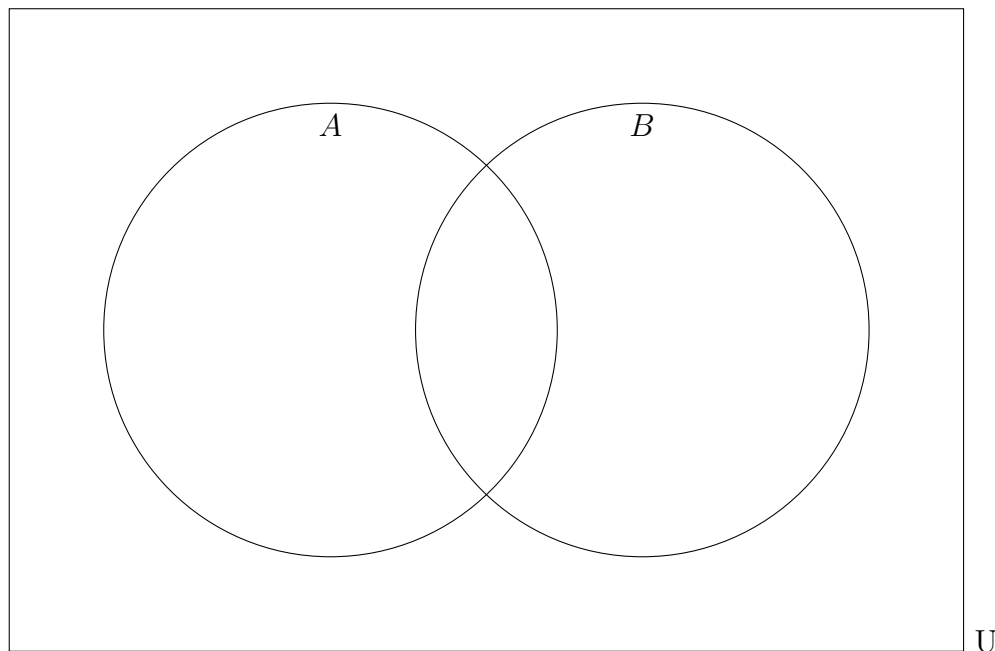
$B = \{\text{prime numbers}\}$

(note: Prime numbers have only themselves and one as factors. One is not considered a prime.)

(a) List the members of A

(b) List the members of B

(c) Place the elements of A and B in the appropriate regions in the Venn diagram below.



(d) List the items in the set $(A \cup B)'$

(e) If an element is selected at random, what is the probability that it is a member of the set $A \cap B$?