

**Factoring Practice & Other Review**

Completely show all work and reasoning. Use a pencil and highlight your answers.

1. Completely factor each quadratic.

a) $x^2 - 4x$	b) $3x^2 + 18x$	c) $10x^2 - 25x$
d) $x^2 + 9x + 20$	e) $x^2 + 11x + 10$	f) $x^2 + 11x + 18$
g) $x^2 + 16x + 63$	h) $x^2 + 12x + 20$	i) $x^2 + 25x + 150$
j) $x^2 + 24x + 144$	k) $x^2 + 12x + 32$	l) $x^2 + 6x + 9$
m) $x^2 + 17x + 72$	n) $x^2 + 33x + 90$	o) $x^2 + 17x + 52$

2. Complete the square to write each function in vertex form.

a) $f(x) = x^2 + 8x + 22$	b) $f(x) = x^2 - 11x + 17$	c) $f(x) = 5x^2 + 20x - 11$
d) $f(x) = \frac{1}{3}x^2 + 8x + 54$	e) $f(x) = -3x^2 - 36x - 67$	f) $f(x) = -\frac{1}{4}x^2 - 4x - 11$

3. Complete the square to write each function in vertex form, then graph the function.

a)  $f(x) = -2x^2 + 20x - 43$

b)  $f(x) = \frac{1}{2}x^2 - 4x + 3$

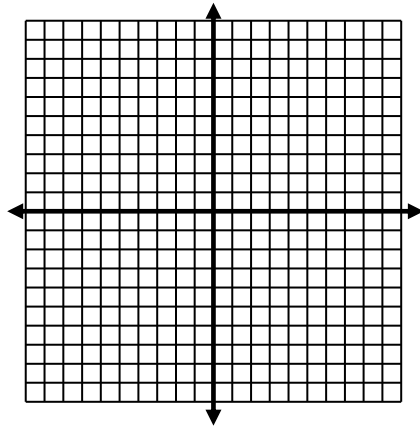
Vertex:

Stretch:

Orientation:

Domain:

Range:



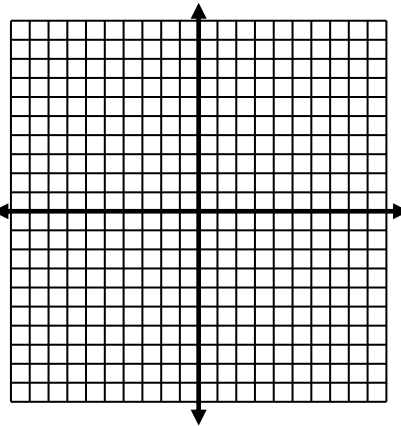
Vertex:

Stretch:

Orientation:

Domain:

Range:



4. When Jasmine was 1 year old, her family put \$1000 into a well-diversified portfolio that earned 18% interest compounded annually. Karissa's family put \$4000 into an account when she turned 5 years old, and they saved \$1000 each year. Sydni's parents were a bit more eccentric since they were crazy math teachers. Ever since her birth, Sydni's parents would square her age and multiply the result by 40, and the resulting number was how much they wanted in her savings account at that particular year.

a) Write explicit and recursive functions  $J(t)$  to represent Jasmine's account over  $t$  years.

explicit:

recursive:

b) Write explicit and recursive functions  $K(t)$  to represent Karissa's account over  $t$  years.

explicit:

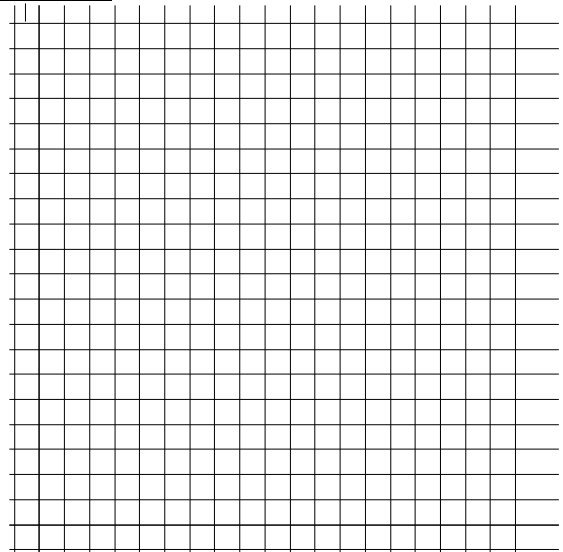
recursive:

c) Write explicit and recursive functions  $S(t)$  to represent Sydni's account over  $t$  years.

explicit:

recursive:

e) Graph the amount of savings for each person over  $t$  years. You should make tables on a separate sheet of paper to help you graph each function.



d) Which person will have the most money when she turns 18 years old? Show your work.