Lösungen zu den Aufgabenstellungen zu quadratischen Funktionen

1.)
Wie heißen die Funktionsgleichungen in allgemeiner Form zu den nachfolgenden Parabeln?

a)
$y = (x - 1)^2 - 2$
$y = x^2 - 2x - 1$

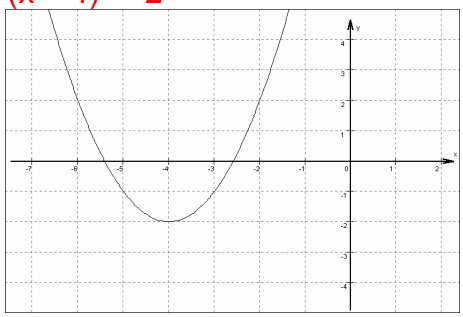
b)
$y = (x + 2)^2 + 1$
$y = x^2 + 4x + 5$

c)
$y = (x - 3)^2 + 2$
$y = x^2 - 6x + 11$

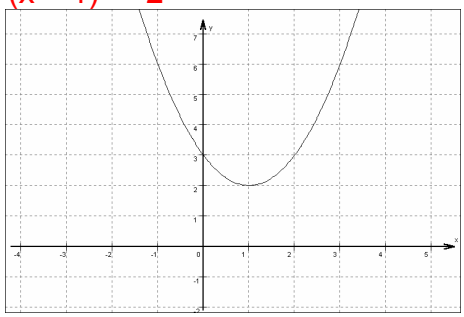
d)
$y = (x + 4)^2 - 4$
$y = x^2 + 8x + 12$

2.)
Forme um in die Scheitelpunktform! Stelle die Parabeln grafisch dar.

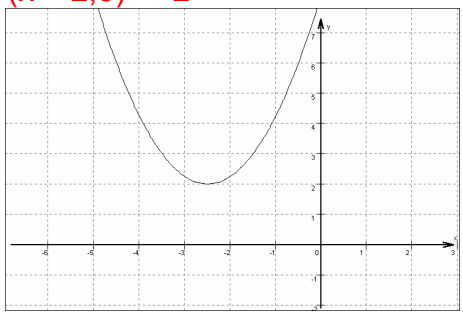
a) $y = x^2 + 8x + 14$
$y = (x + 4)^2 - 2$



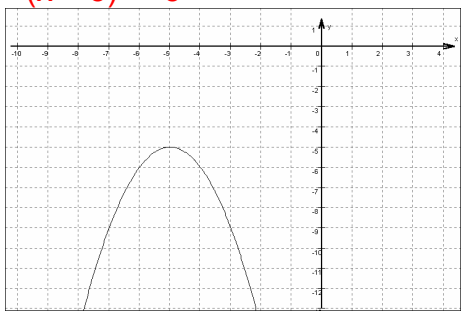
b) $y = x^2 - 2x + 3$
$y = (x - 1)^2 + 2$



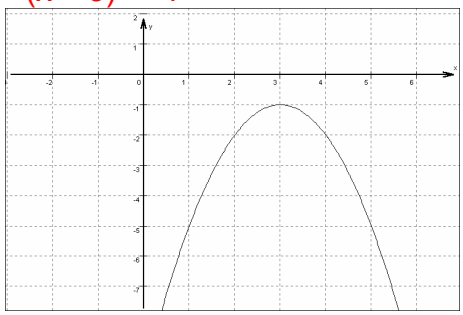
c) $y = x^2 + 5x + 8{,}25$
$y = (x + 2{,}5)^2 + 2$



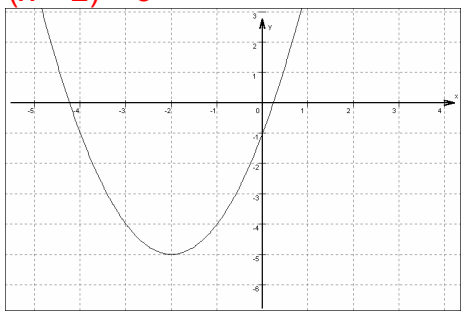
d) $y = -x^2 - 10x - 30$
$y = -(x + 5)^2 - 5$



e) $y = -x^2 + 6x - 10$
$y = -(x - 3)^2 - 1$



f) $y = x^2 + 4x - 1$
$y = (x + 2) - 5$

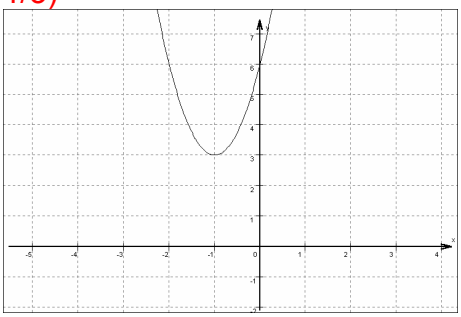


3.)
Faktorisiere mit Hilfe der quadratischen Ergänzung um in die Scheitelpunktform. Stelle die Parabeln grafisch dar.

a) $y = 3x^2 + 6x + 6$

$y = 3(x + 1)^2 + 3$

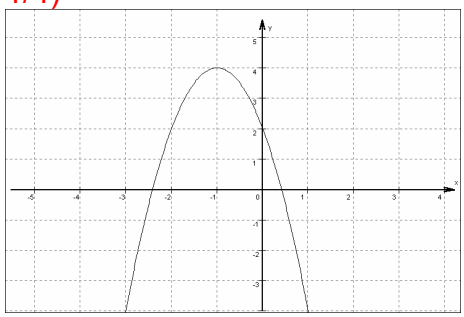
S(–1/3)



b) $y = -2x^2 - 4x + 2$

$y = -2(x + 1)^2 + 4$

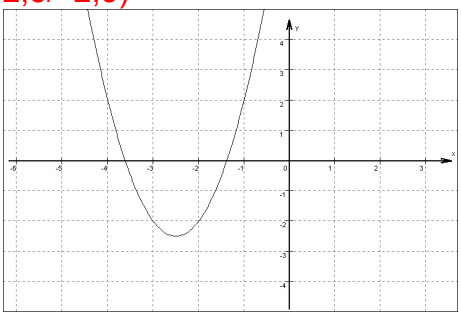
S(–1/4)



c) $y = 2x^2 + 10x + 10$

$y = 2(x + 2{,}5)^2 - 2{,}5$

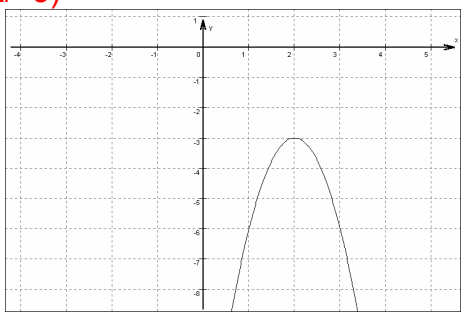
S(–2,5/–2,5)



d) $y = -3x^2 + 12x - 15$

$y = -3(x - 2)^2 - 3$

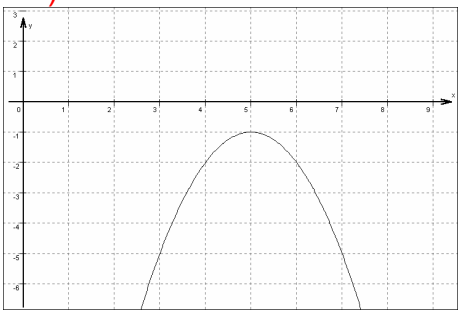
S(2/–3)



e) $y = -x^2 + 10x - 26$

$y = -(x - 5)^2 - 1$

S(5/–1)



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

$y = \frac{1}{2}(x - 4)^2 - 5$

S(4/–5)