No. 19 Test F

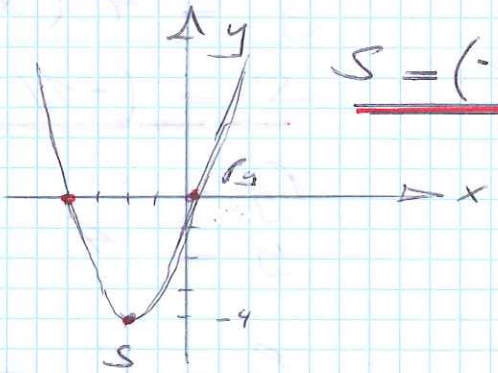
1. $y = (x+2)^2 - 4$

$S_y = ?$

$y = (0+2)^2 - 4$

$y = 4 - 4 = 0$

$\Rightarrow S_y = (0/0)$



$S = (-2/-4)$

$S_x = ?$

$0 = (x+2)^2 - 4$

$0 = x^2 + 4x + 4 - 4$

$0 = x^2 + 4x = x(x+4)$ → $x_1 = 0$, $x_2 = -4$

$S_{x_1} = (0/0)$ $S_{x_2} = (-4/0)$

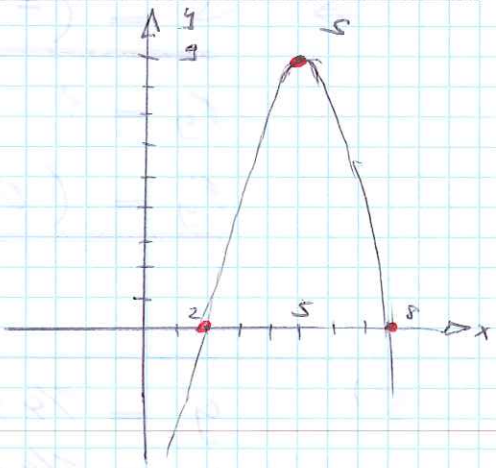
2. $y = -x^2 + 10x - 16$

$y = -(x^2 - 10x + 16)$

$y = -[(x-5)^2 - 25 + 16]$

$y = -(x-5)^2 + 9$

$S = (5/9)$



$S_y = ?$

$y = -x^2 + 10x - 16 \quad (x = 0) \Rightarrow y = -16$

$S_y = (0/-16)$

$S_x = ?$

$0 = -(x-5)^2 + 9$

$0 = -(x^2 - 10x + 25) + 9 = -x^2 + 10x - 25 + 9$

$0 = -x^2 + 10x - 16$

$x_{1,2} = \frac{-10 \pm \sqrt{10^2 - 4 \cdot 16}}{-2} = \frac{-10 \pm \sqrt{36}}{-2}$

$x_1 = \frac{8}{2}$

$x_2 = \frac{2}{2}$

$S_{x_1} = (8/0)$

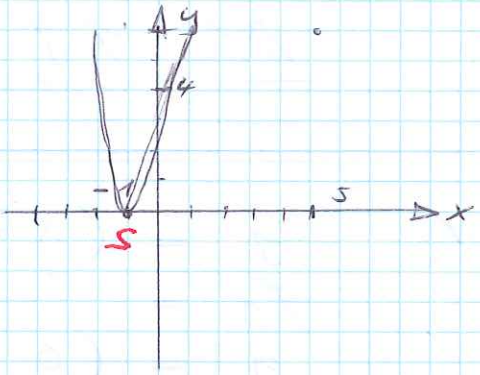
$S_{x_2} = (2/0)$

3) $y = 4x^2 + 8x + 4$

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

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

$S = (-1/0)$



$S_y = ?$ $(x = 0)$

$y = 4 \Rightarrow S_y = (0/4)$

$S_{x_1} = S_{x_2} = (-1/0)$

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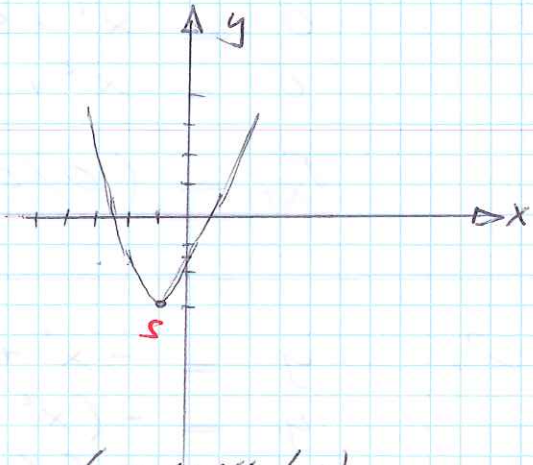
4) $y = 1\frac{1}{2}x^2 + 3x - 1\frac{1}{2}$

$y = 1{,}5(x^2 + 2x - 1)$

$y = 1{,}5[(x+1)^2 - 1 - 1]$

$y = 1{,}5(x+1)^2 - 3$

$\Rightarrow S = (-1/-3)$



$S_y = ?$ $(x = 0)$

$S_y = (0/-1{,}5)$

$S_{x_1} = (0{,}414/0)$

$S_{x_2} = (-\sqrt{2}-1/0)$

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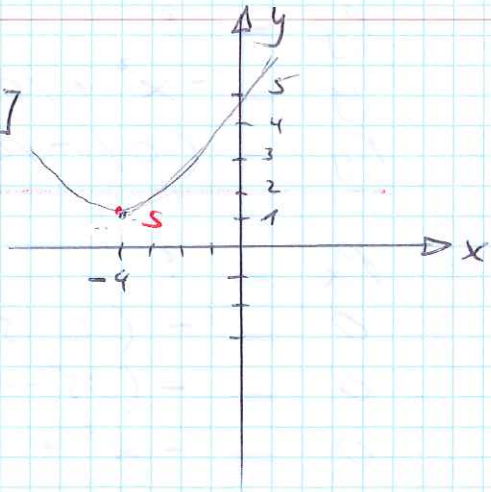
5) $y = \frac{1}{4}x^2 + 2x + 5$

$y = \frac{1}{4}(x^2 + 8x + 20)$

$y = \frac{1}{4}[(x+4)^2 - 16 + 20]$

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

$S = (-4/+1)$



$S_y = (0/5)$

keine x-Achsenschnittpunkte

No. 19 — 30 Minuten

	Test E	Name	P:	N:

Bestimme in den Aufgaben jeweils den Scheitelpunkt und die Achsenschnittpunkte.

① $y = (x+2)^2 - 4$

$P_y = (0/0)$

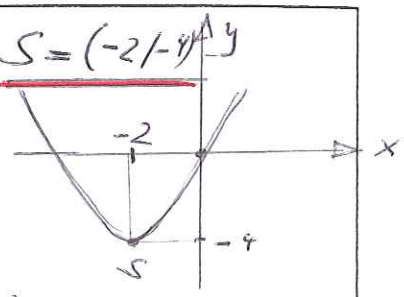
$S = (-2/-4)$

$P_x = ?$

$0 = (x+2)^2 - 4$

$0 = x^2 + 4x + 4 - 4$

$0 = x(x+4) \Rightarrow$ $P_{x1} = (0/0)$, $P_{x2} = (-4/0)$



② $y = -x^2 + 10x - 16$

$y = -(x^2 - 10x + 16)$

$y = -[(x-5)^2 - 25 + 16]$

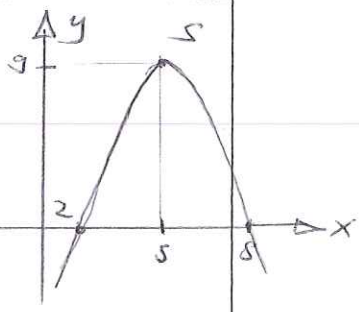
$y = -(x-5)^2 + 9$

$S = (5/9)$

$P_y = (0/-16)$

$P_{x1} = (8/0)$

$P_{x2} = (2/0)$



③ $y = 4x^2 + 8x + 4$

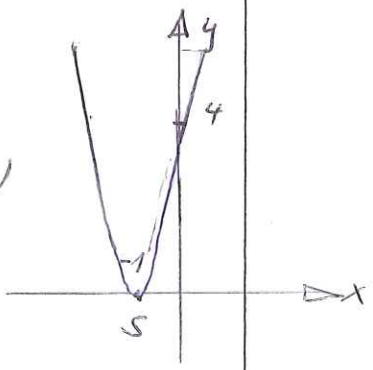
$y = 4(x^2 + 2x + 1)$

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

$S = (-1/0)$

$P_y = (0/4)$

$P_{x1} = P_{x2} = (-1/0)$



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

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

$y = 1\frac{1}{2}[(x+1)^2 - 1 - 1]$

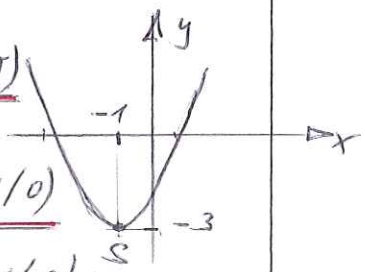
$y = 1{,}5(x+1)^2 - 3$

$S = (-1/-3)$

$P_y = (0/-1{,}5)$

$P_{x1} = (0{,}414/0)$

$P_{x2} = (-2{,}414/0)$



⑤ $y = \frac{1}{4}x^2 + 2x + 5$

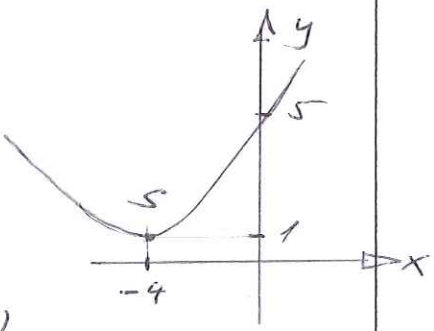
$y = \frac{1}{4}(x^2 + 8x + 20)$

$y = \frac{1}{4}[(x+4)^2 - 16 + 20]$

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

$S = (-4/1)$

$P_y = (0/5)$



$\Rightarrow$ es gibt keine x-Achsenabschnitte