



ÖVNINGAR PÅ KVADRATISKA FUNKTIONER

EUROPASKOLAN
STRÄNGNÄS

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Här finns ett antal ekvationer som beskriver parablar och ett antal grafer. Öva på att rita lösningsmängden till ekvationen (grafen till funktionen $y(x)$ om du så vill) samt på att bestämma ekvationen för en graf.

Ledning: En parabel kan skrivas på formen $y = \pm (\alpha(x - x_S)^2) + d$. Bestäm tecknet och d direkt ur grafen. Identifiera sedan α ur "trappan" $1 \rightarrow 3 \rightarrow 5$. Värdet på $\frac{1}{\alpha}$ är steglängden i x -led för att få dessa steg i y -led.

1. a) $y = (x - 6)^2 + 6$

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

c) $y = \left(\frac{1}{3}(x + 4)\right)^2 + 1$

2. a) $y = -(x - 6)^2 + 6$

b) $y = -\left(\frac{1}{3}(x + 6)\right)^2 - 6$

c) $y = -\left(\frac{1}{3}x\right)^2 + 5$

3. a) $y = (x + 5)^2 - 2$

b) $y = (4(x - 5))^2 - 4$

c) $y = (3(x - 4))^2 + 3$

4. a) $y = (x - 3)^2 - 4$

b) $y = -(3(x - 6))^2$

c) $y = (3(x - 5))^2 + 5$

5. a) $y = x^2 + 3$

b) $y = -(2(x - 5))^2 - 4$

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

6. a) $y = (x + 2)^2 + 1$

b) $y = (4(x + 6))^2 + 2$

c) $y = -(2(x - 3))^2 - 4$

7. a) $y = (x - 5)^2 - 4$

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

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

8. a) $y = -(x + 6)^2 + 6$

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

c) $y = -\left(\frac{1}{2}(x - 6)\right)^2 - 6$

9. a) $y = -(x - 3)^2 + 1$

b) $y = (4(x - 3))^2 - 1$

c) $y = \left(\frac{1}{3}(x - 3)\right)^2 + 5$

10. a) $y = -(x + 5)^2 - 2$

b) $y = \left(\frac{1}{3}(x + 1)\right)^2 + 1$

c) $y = \left(\frac{1}{3}(x - 1)\right)^2 - 3$

11. a) $y = -(x + 6)^2 - 5$

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

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

12. a) $y = (x - 3)^2 + 4$

b) $y = \left(\frac{1}{3}(x + 6)\right)^2 - 6$

c) $y = -\left(\frac{1}{2}(x + 5)\right)^2 - 3$

13. a) $y = -x^2$

b) $y = \left(\frac{1}{4}(x - 6)\right)^2 + 5$

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

14. a) $y = (x - 4)^2 - 5$

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

c) $y = (2(x + 5))^2 + 2$

15. a) $y = -(x + 1)^2 - 6$

b) $y = \left(\frac{1}{2}(x + 6)\right)^2 + 1$

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

16. a) $y = -(x - 3)^2$

b) $y = (3(x - 5))^2 - 5$

c) $y = -(4(x - 2))^2 - 6$

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

b) $y = (4(x - 6))^2$

c) $y = -\left(\frac{1}{3}(x + 3)\right)^2 - 3$

18. a) $y = -(x - 5)^2 + 2$

b) $y = -\left(\frac{1}{2}(x - 6)\right)^2 - 2$

c) $y = -(4(x - 5))^2 - 5$

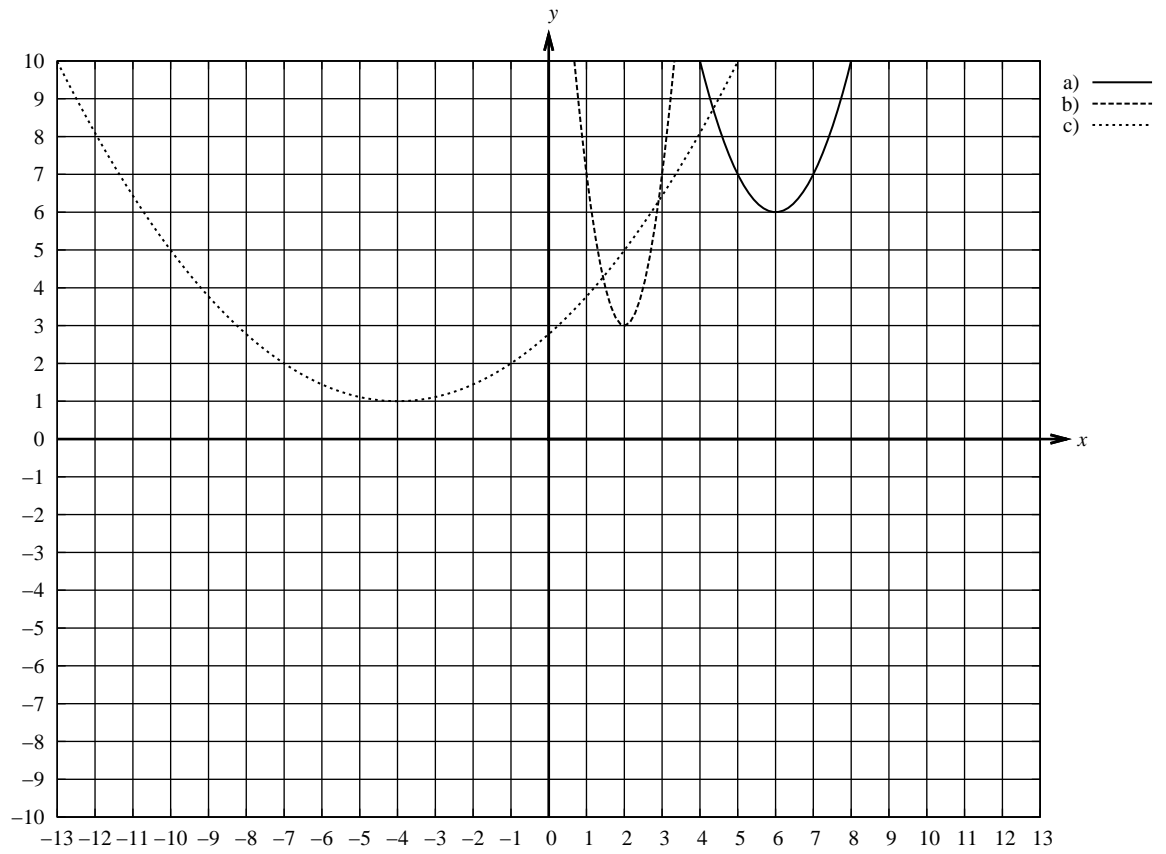
19. a) $y = -(x + 3)^2 - 3$

b) $y = (3(x + 5))^2$

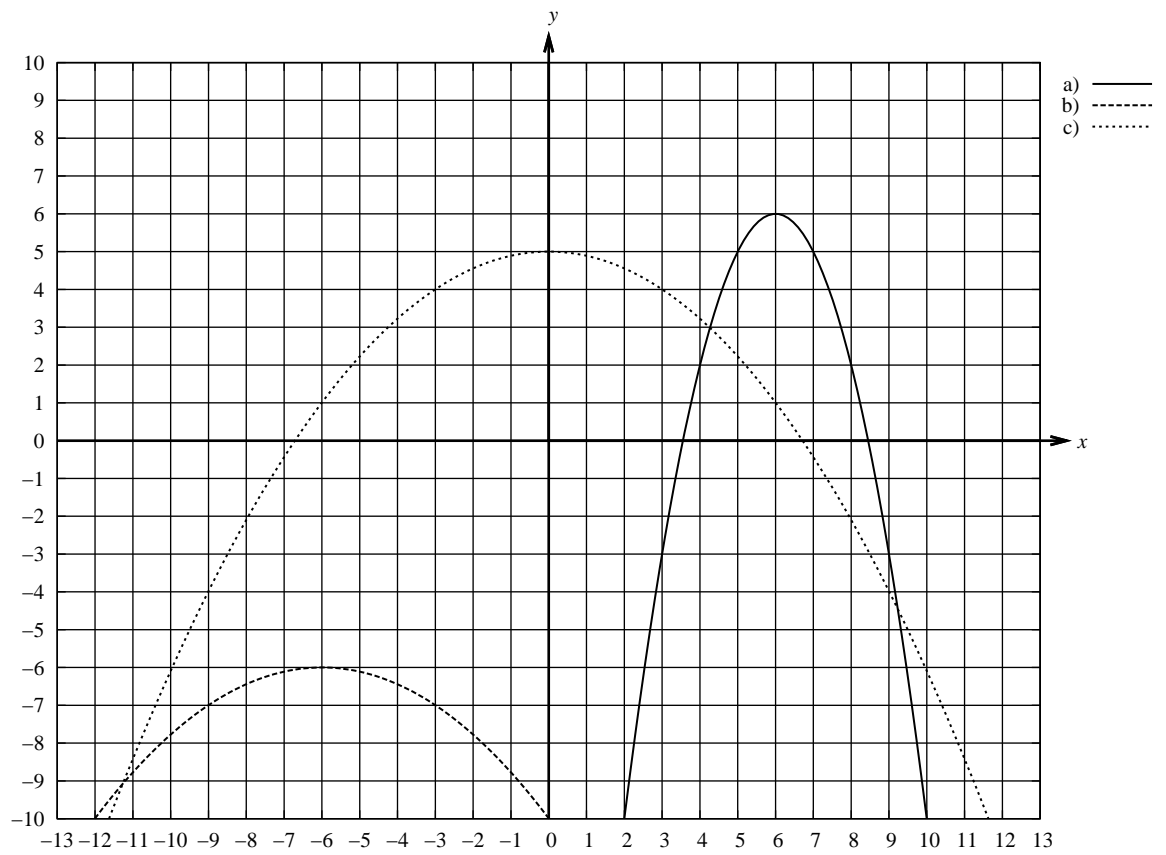
c) $y = \left(\frac{1}{4}x\right)^2 - 5$

Grafer:

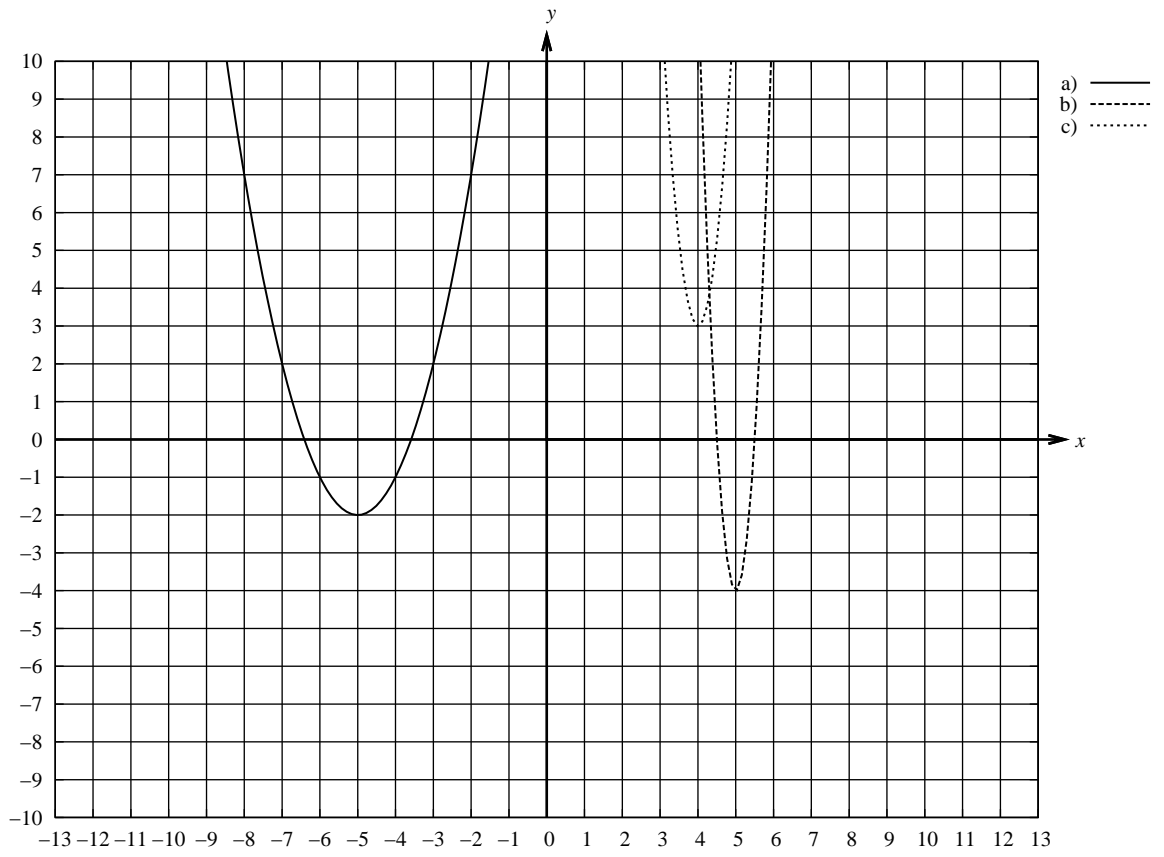
1. a) b) c)



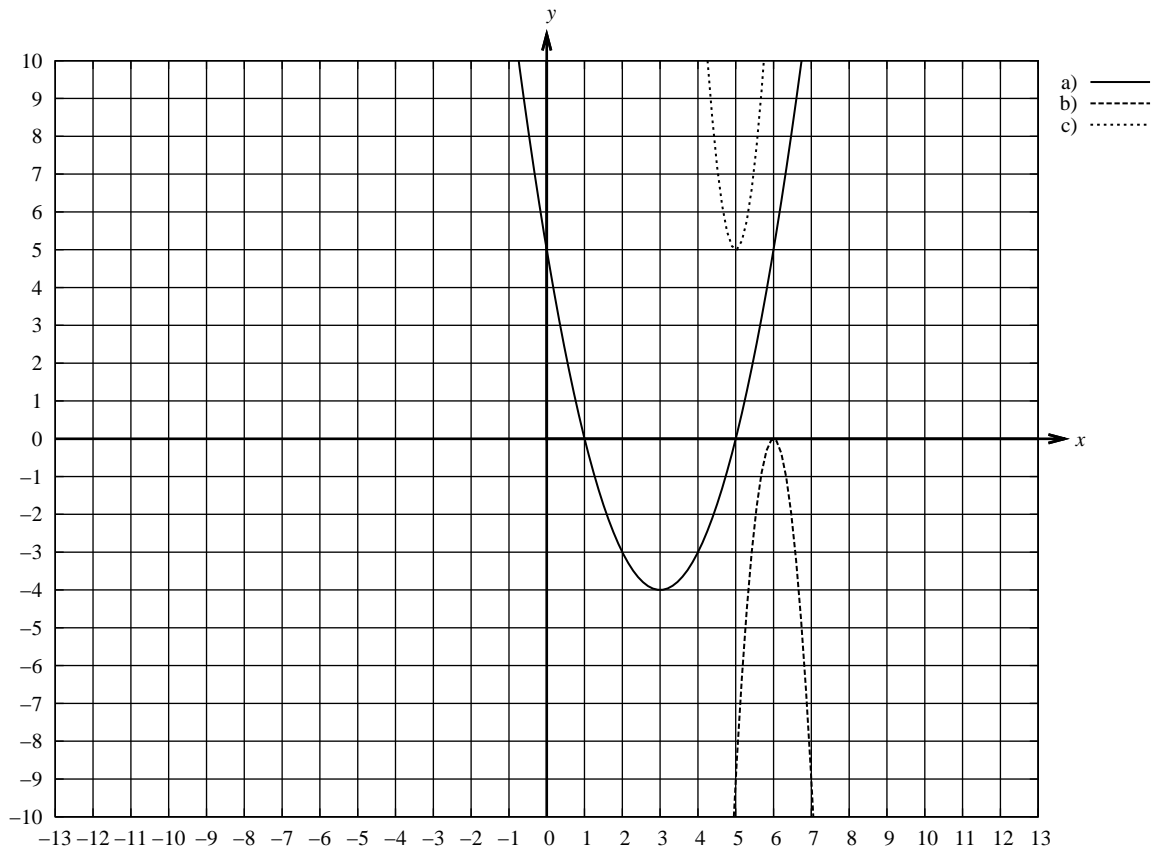
2. a) b) c)



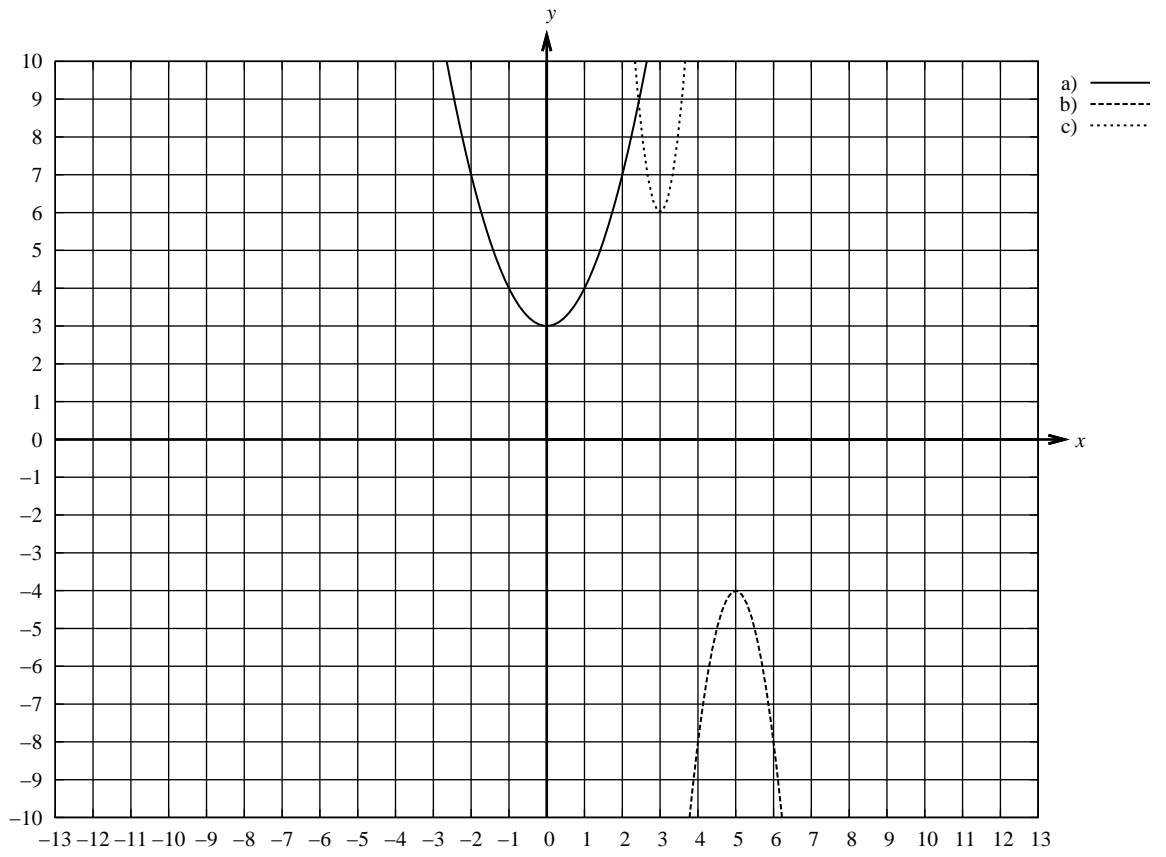
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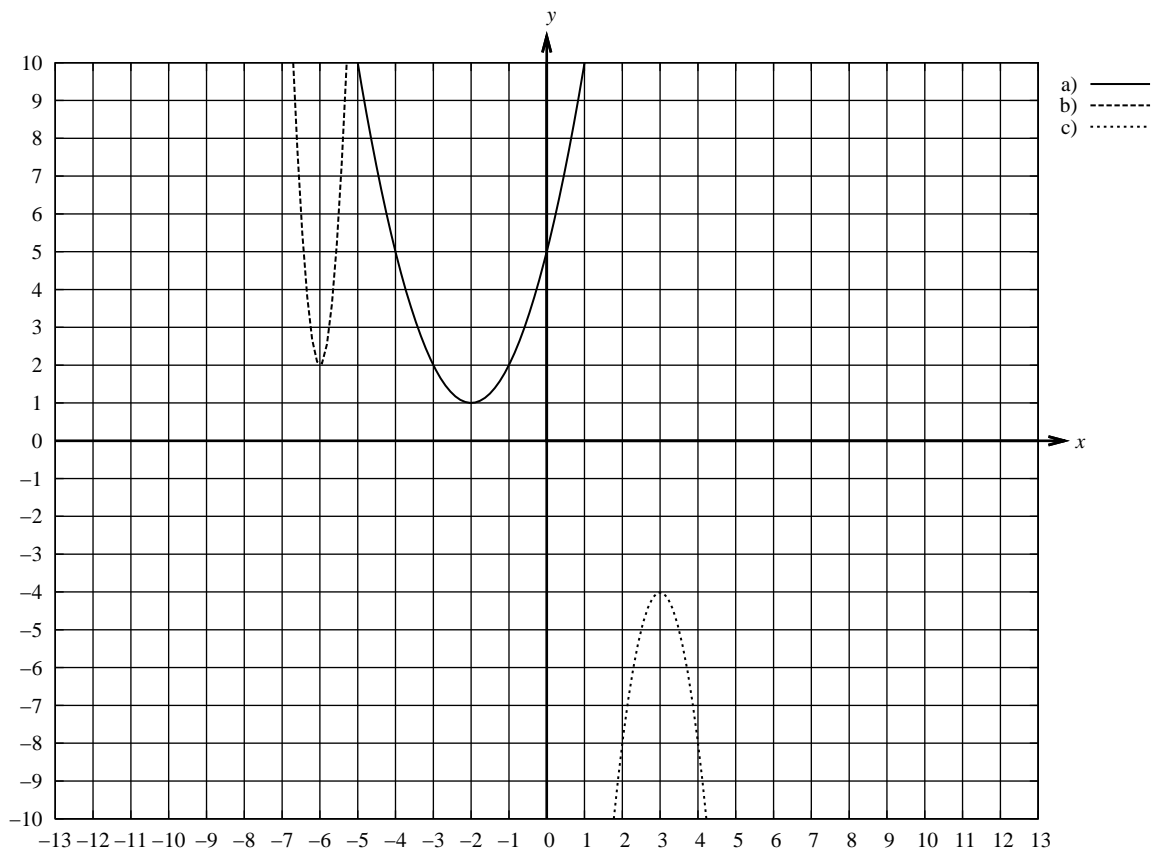
4. a) b) c)



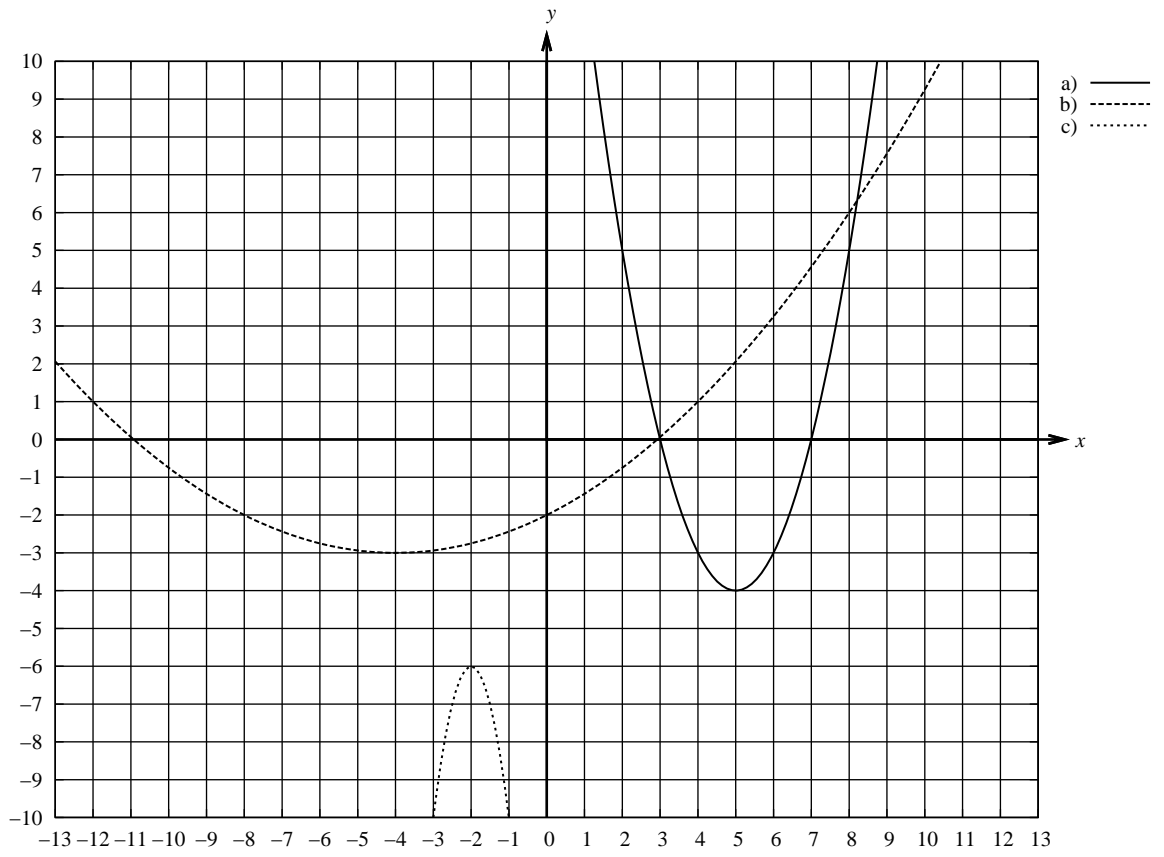
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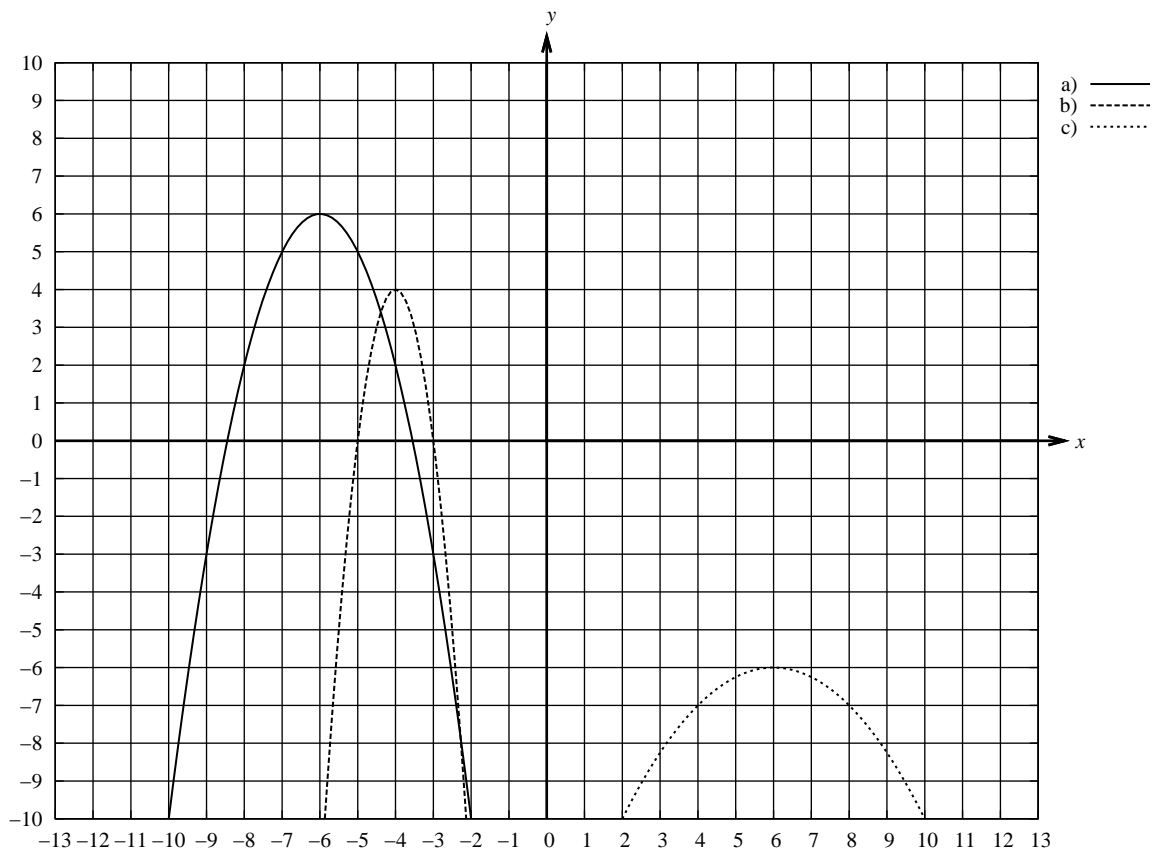
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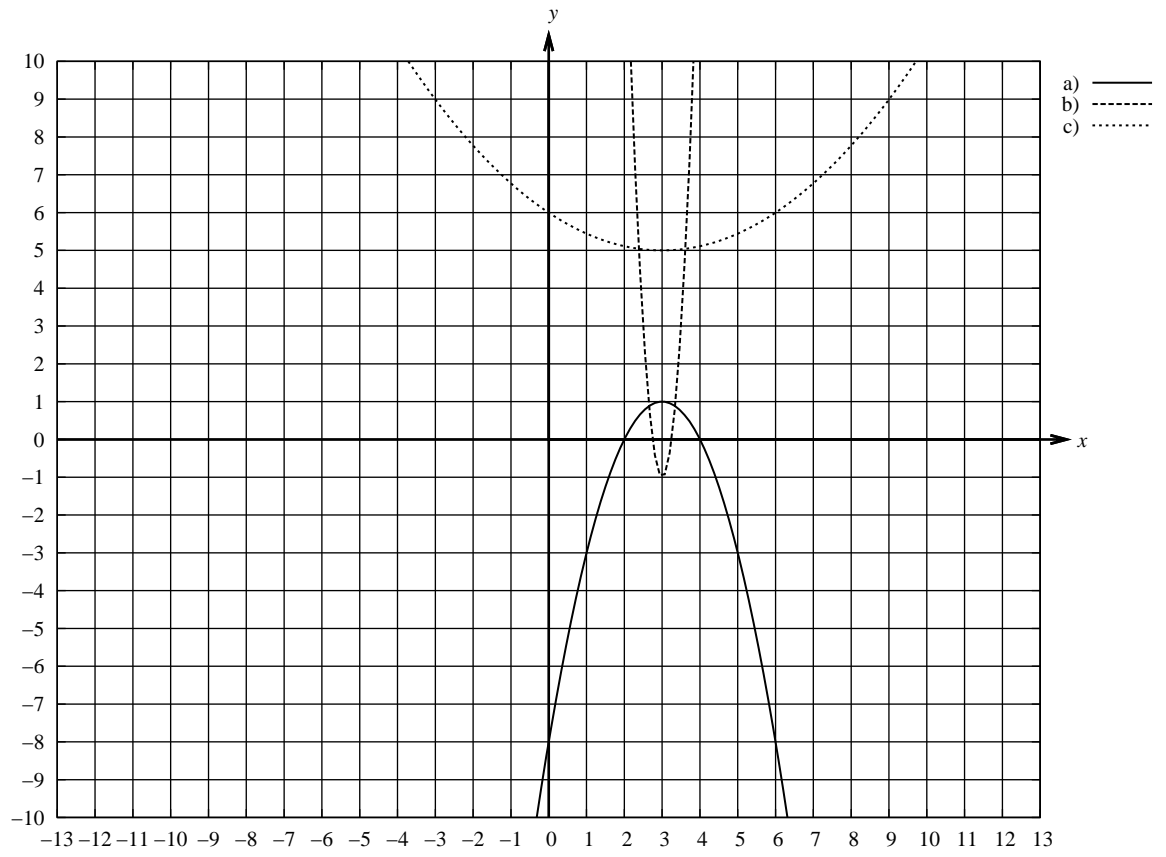
7. a) b) c)



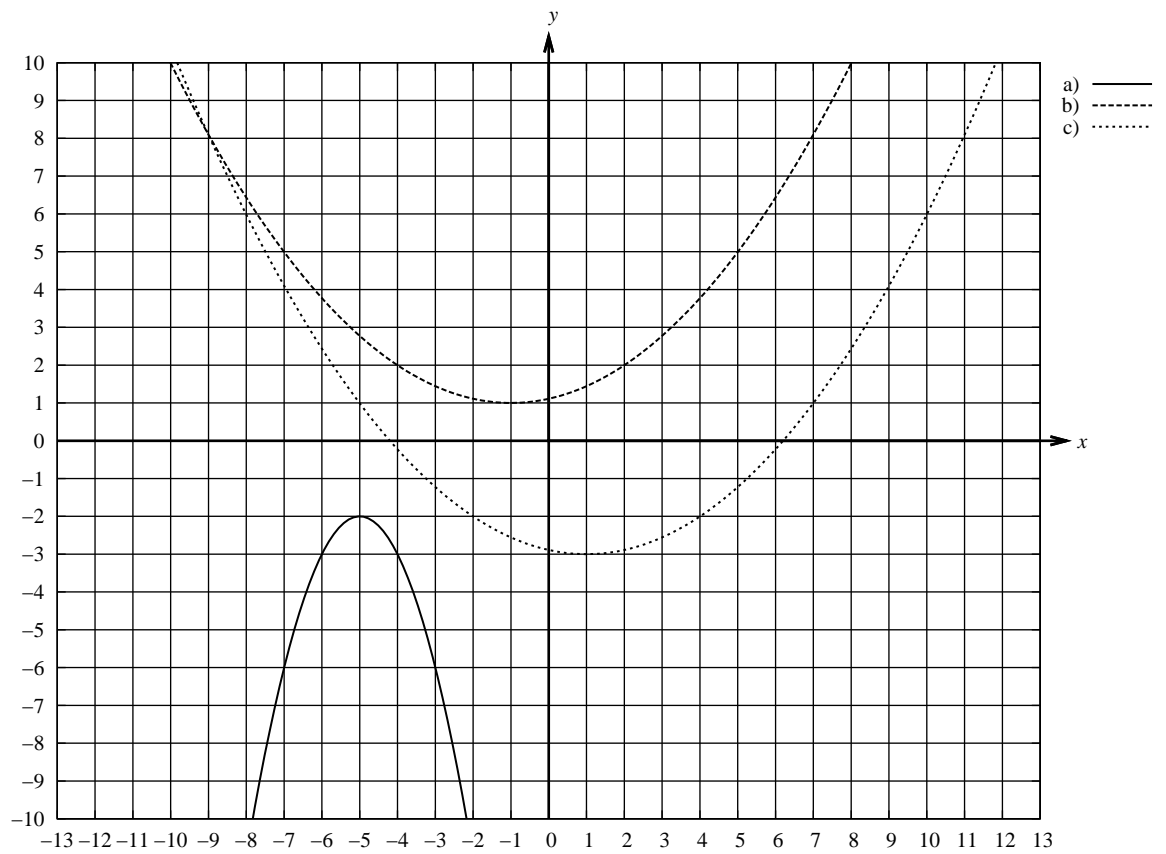
8. a) b) c)



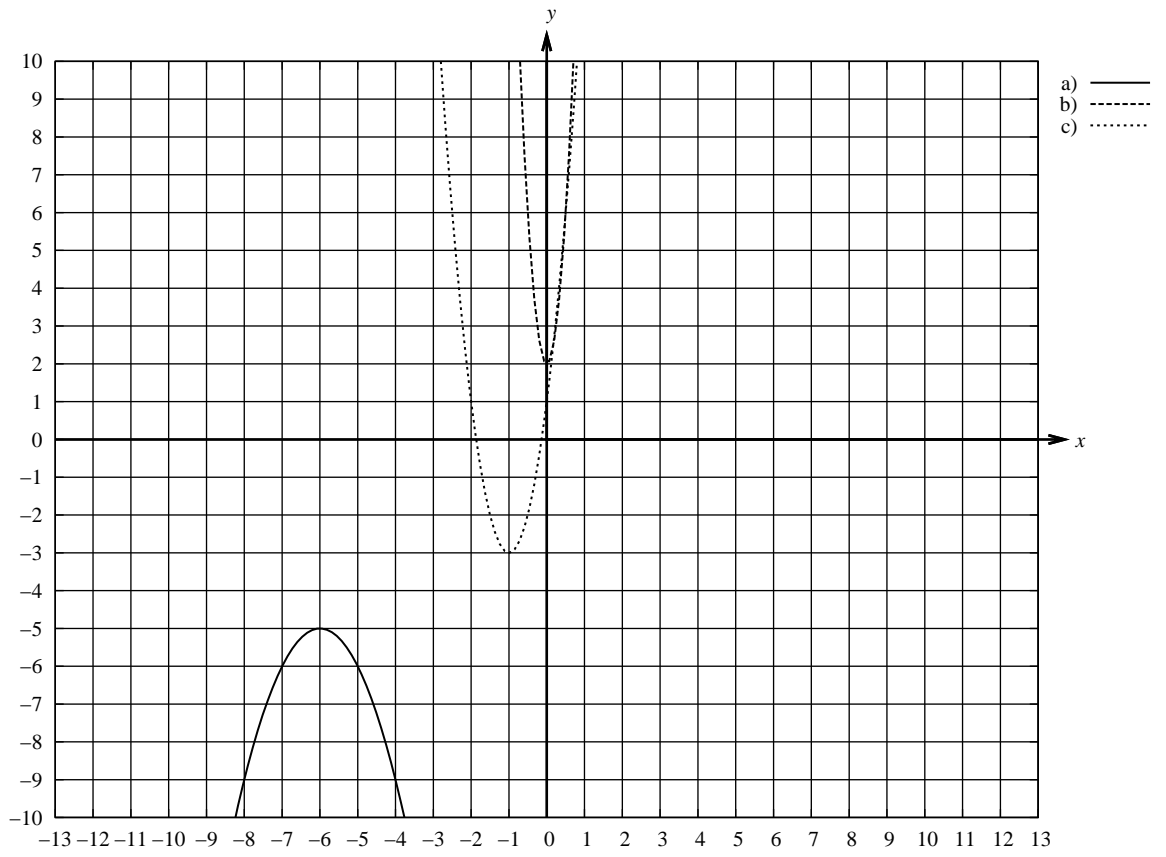
9. a) b) c)



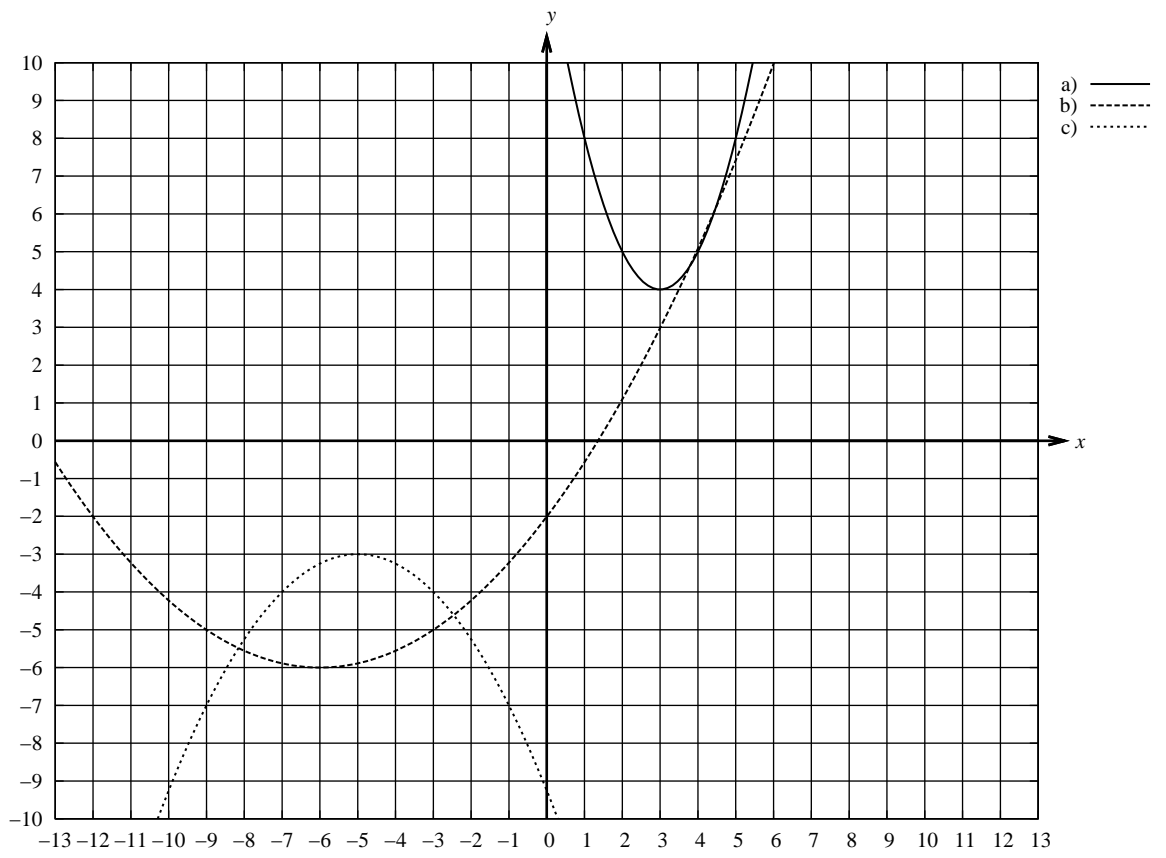
10. a) b) c)



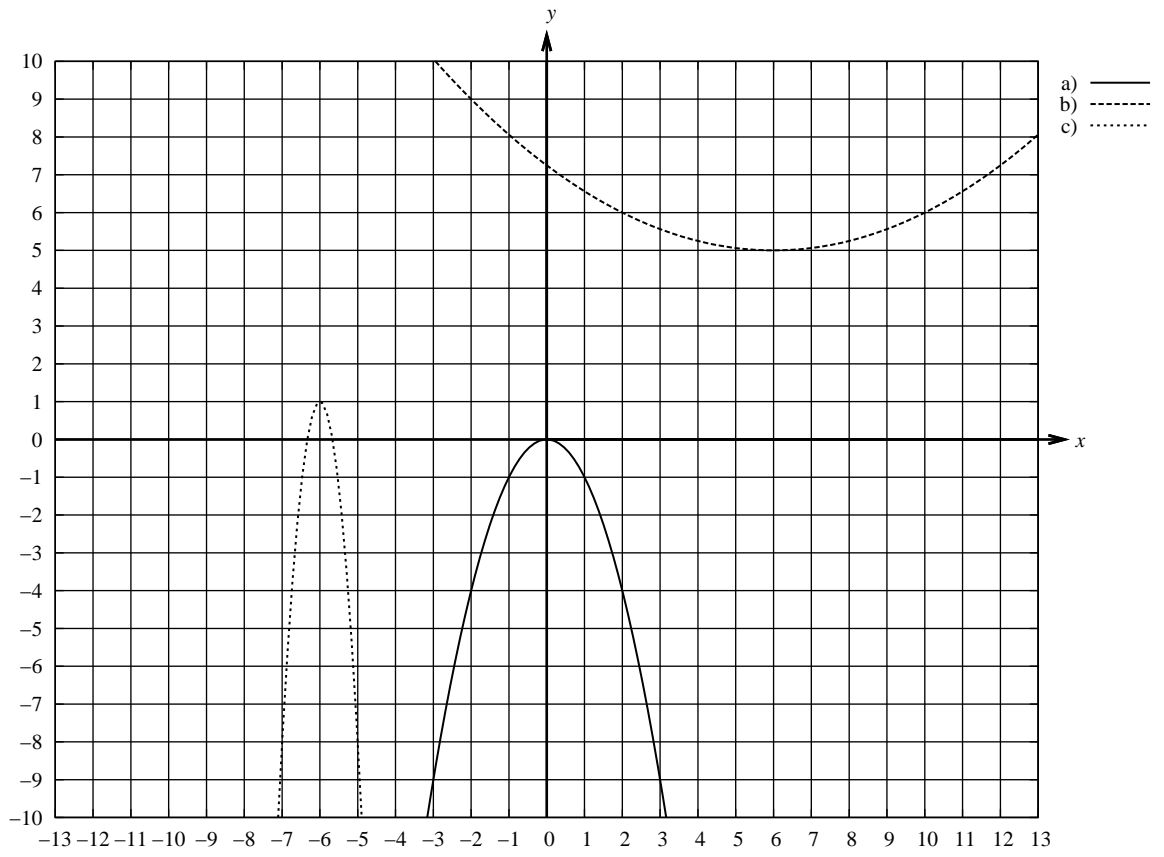
11. a) b) c)



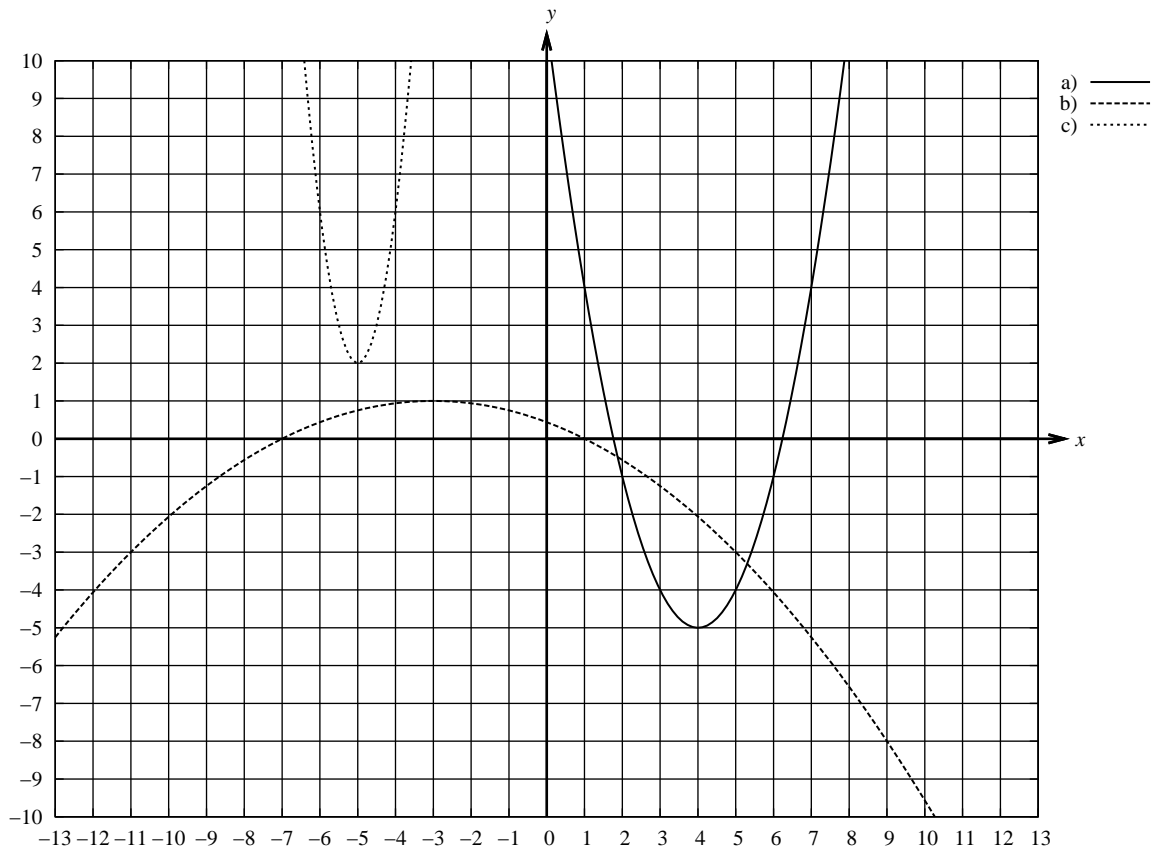
12. a) b) c)



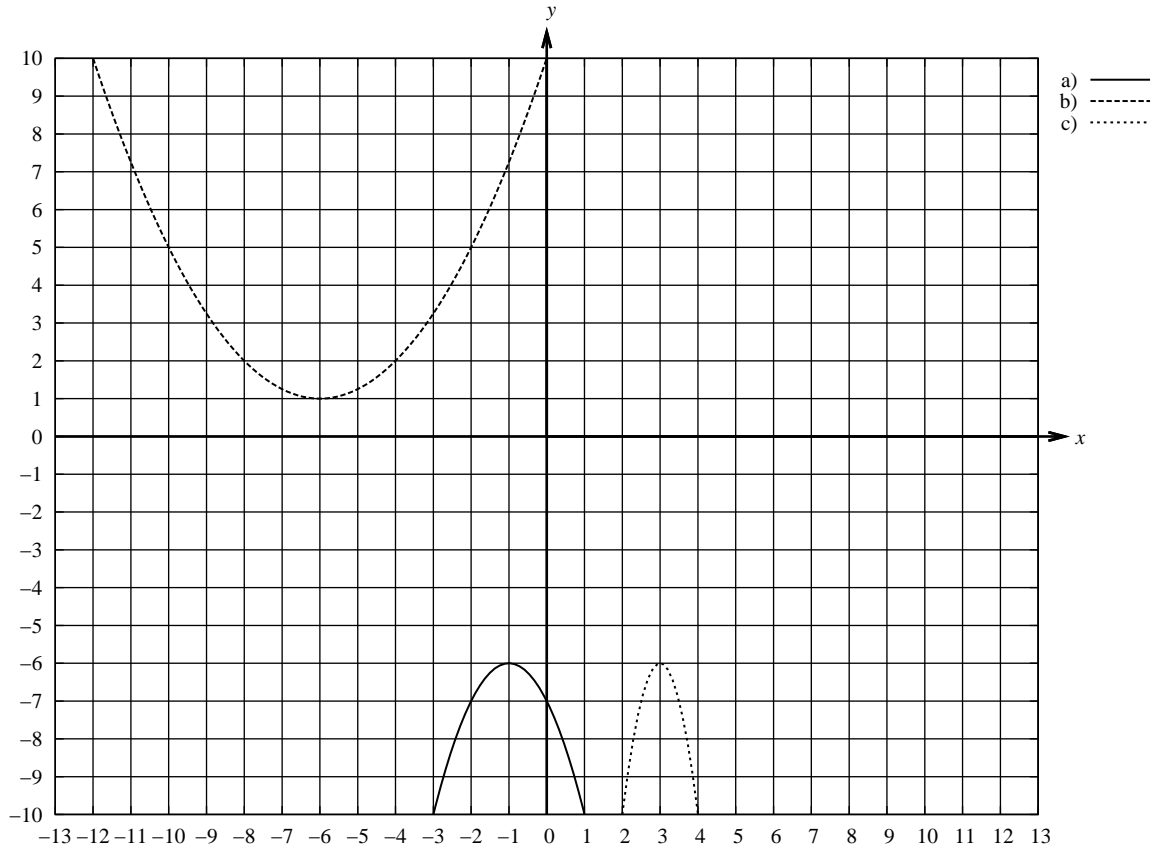
13. a) b) c)



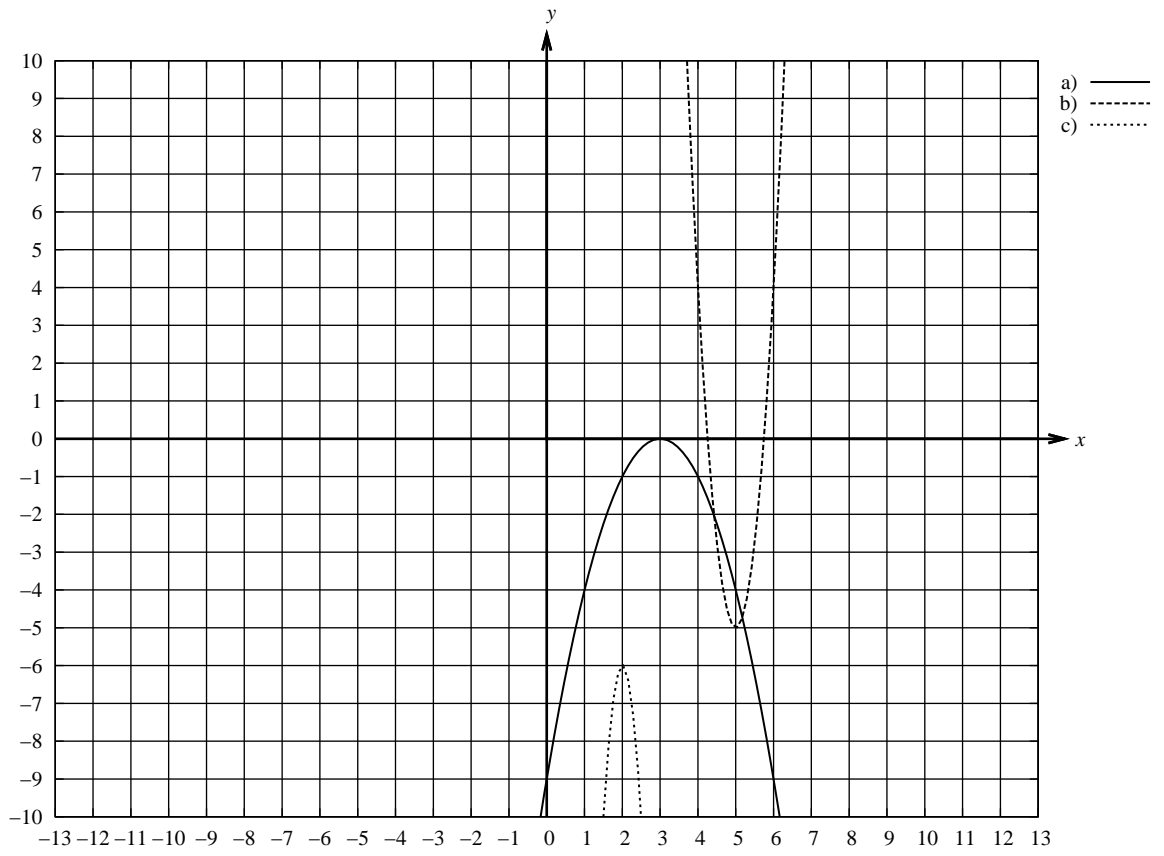
14. a) b) c)



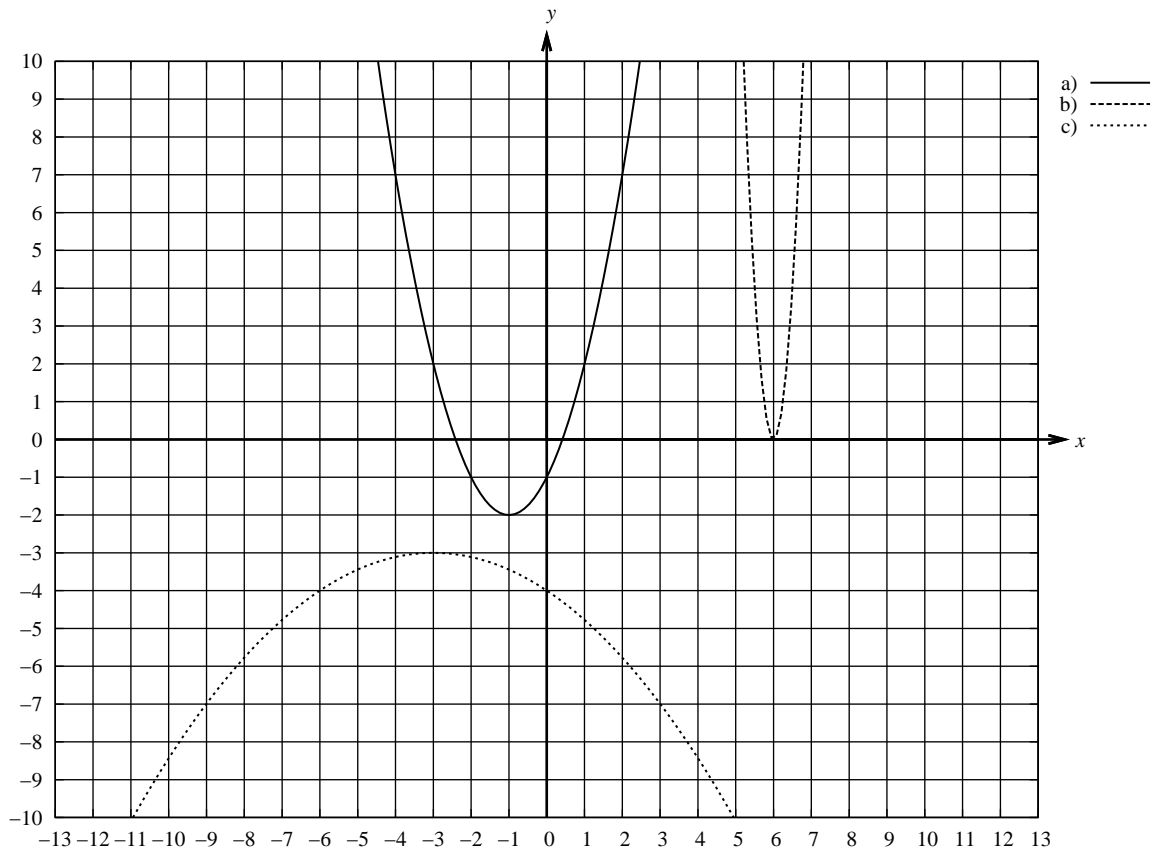
15. a) b) c)



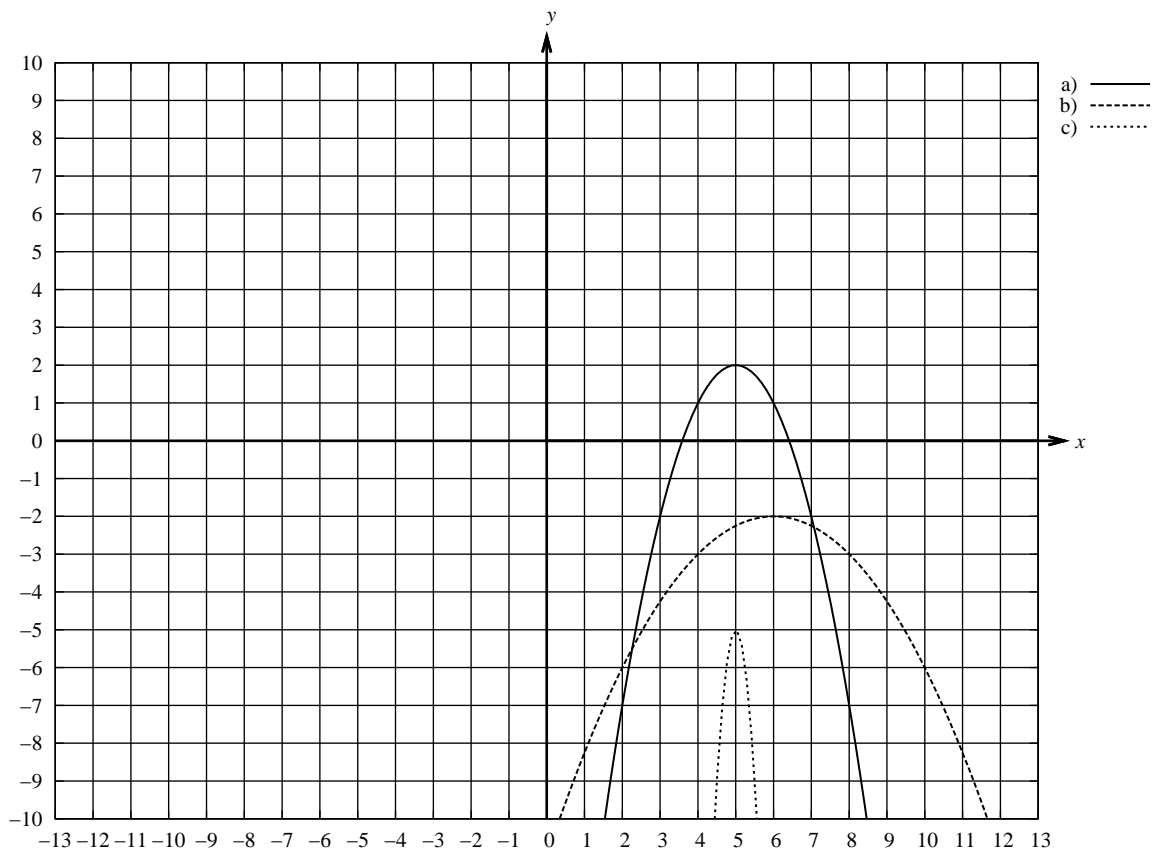
16. a) b) c)



17. a) b) c)



18. a) b) c)



19. a) b) c)

