Plotting Quadratic Graphs – Create-a-Picture

For each of the following equations, complete the table of values and plot the graph of the equation between the x-values given. Give y-coordinates to 2 decimal places where appropriate.

1. $y = \frac{x^2}{8} + 8 \quad \{-4 \leq x \leq 4\}$

x	-4	-3	-2	-1	0	1	2	3	4
y	10	9.13	8.5	8.13	8	8.13	8.5	9.13	10

2. $y = \frac{x^2}{4} - 2x + 14 \quad \{0 \leq x \leq 4\}$

x	0	0.5	1	1.5	2	2.5	3	3.5	4
y	14	13.06	12.25	11.56	11	10.56	10.25	10.06	10

3. $y = \frac{x^2}{4} + 2x + 14 \quad \{-4 \leq x \leq 0\}$

x	-4	-3.5	-3	-2.5	-2	-1.5	-1	-0.5	0
y	10	10.06	10.25	10.56	11	11.56	12.25	13.06	14

4. $y = \frac{x^2}{4} - 3x + 13 \quad \{2 \leq x \leq 6\}$

x	2	2.5	3	3.5	4	4.5	5	5.5	6
y	8	7.06	6.25	5.56	5	4.56	4.25	4.06	4

5. $y = \frac{x^2}{4} + 3x + 13 \quad \{-6 \leq x \leq -2\}$

x	-6	-5.5	-5	-4.5	-4	-3.5	-3	-2.5	-2
y	4	4.06	4.25	4.56	5	5.56	6.25	7.06	8

6. $y = \frac{x^2}{12} + 1 \quad \{-6 \leq x \leq 6\}$

x	-6	-4	-2	0	2	4	6
y	4	2.33	1.33	1	1.33	2.33	4

7. $y = \frac{x^2}{4} - 4x + 14 \quad \{4 \leq x \leq 8\}$

x	4	4.5	5	5.5	6	6.5	7	7.5	8
y	2	1.06	0.25	-0.44	-1	-1.44	-1.75	-1.94	-2

8. $y = \frac{x^2}{4} + 4x + 14 \quad \{-8 \leq x \leq -4\}$

x	-8	-7.5	-7	-6.5	-6	-5.5	-5	-4.5	-4
y	-2	-1.94	-1.75	-1.44	-1	-0.44	0.25	1.06	2

9. $y = \frac{x^2}{16} - 6 \quad \{-8 \leq x \leq 8\}$

x	-8	-6	-4	-2	0	2	4	6	8
y	-2	-3.75	-5	-5.75	-6	-5.75	-5	-3.75	-2

Now add the following straight lines:

10. $y = -9 \quad \{-2 \leq x \leq 2\}$

11. $x = -2 \quad \{-9 \leq y \leq -6\}$

12. $x = 2 \quad \{-9 \leq y \leq -6\}$

Finally, colour in your picture!

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