The Language of Functions *– in book: Section 2.1 p. 80*

For each of the following scenarios, give the independent variable and dependent variable, and complete the sentence "_____ is a function of _____."

1. A botanist measures the influence of different quantities of fertilizer on plant growth.

Independent variable: _____ *Dependent variable:* _____

_____ *is a function of* _____.

2. In a study of how different doses of a drug affect the severity of symptoms, a researcher could compare the frequency and intensity of symptoms when different doses are administered, and attempt to draw a conclusion.

Independent variable: _____ *Dependent variable:* _____

_____ *is a function of* _____.

3. A plant biologist measures the amount of color removed from beetroot samples at different temperatures.

Independent variable: _____ *Dependent variable:* _____

_____ *is a function of* _____.

4. A sociologist measures the effect of education on income or wealth.

Independent variable: _____ *Dependent variable:* _____

_____ *is a function of* _____.

Determine the domain and range for each function below. Remember, you can determine domain algebraically. You may need to use your graphing calculator to determine range.

5. $d(v) = v + 3$

6. $g(k) = 2k^2 + 4k - 6$

7. $b(n) = \sqrt{2n - 8}$

8. $m(t) = \sqrt{9 - 3t}$

9. $a(r) = r + \dfrac{1}{r - 1}$

10. $q(w) = \dfrac{w + 4}{w^2 + 1}$

Given $f(x) = |x^2 - 13|$, find each value:

11. $f(0)$ **12.** $f(-4)$ **13.** $f\left(-\sqrt{13}\right)$ **14.** $f(2)$

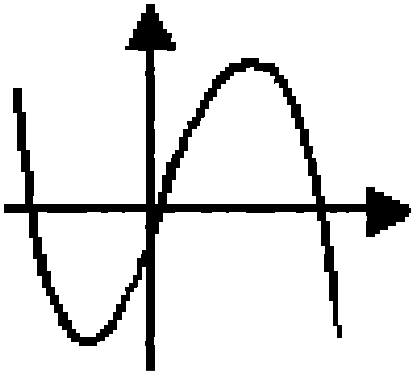
15. $f(4.8)$ **16.** $f\left(1\frac{1}{2}\right)$ **17.** $f(n + 4)$ **18.** $f(5m)$

State whether the relations below are functions:

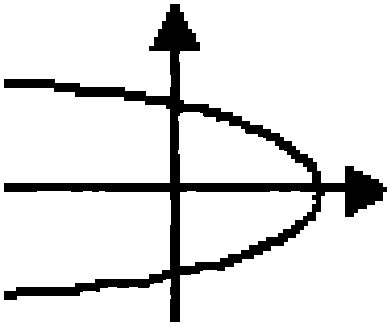
19. {(2, –3), (4, 6), (3, –1), (6, 6), (2, 3)}

20. {(–3, 5), (–2, 5), (–1, 5), (0, 5), (1, 5), (2, 5)}

21.



22.



23. $y^2 + 3x = 6$

24. $2y + 3x = 6$