1. [10 pts.] Write an equation in slope-intercept form for the line through the point $(4, -9)$ and having slope $m = -4/3$.

2. [10 pts.] Write an equation in standard form and also in slope-intercept form for the line through $(1, 6)$ and parallel to $3x + 5y = 1$.

3. [10 pts.] Write an equation in standard form and also in slope-intercept form for the line through $(-2, 3)$ and perpendicular to $8x - 3y = 4$.

4. [10 pts.] Explain why the relation $x = y^6$ is not a function. Also give the domain and range.

5. [10 pts.] Let $f(x) = x^2 - 3x + 1$. Find $f(-4)$ and $f(c + 2)$.

6. [10 pts. each] Find the domain and range of each function.

   (a) $f(x) = x^2 + 2$ for $-3 \le x \le 5$

   (b) $g(x) = \sqrt{7 - 3x}$

7. [10 pts. each] Let $\varphi(x) = \dfrac{8}{x - 4}$, $\psi(x) = \dfrac{x + 1}{x - 2}$.

   (a) Find $\varphi + \psi$ and φ/ψ.

   (b) Find $\mathrm{Dom}(\varphi)$ and $\mathrm{Dom}(\psi)$.

   (c) Find $\mathrm{Dom}(\varphi/\psi)$.

8. [10 pts. each] Let $\alpha(x) = \sqrt{9 - x^2}$ and $\beta(x) = \sqrt{x + 8}$.

   (a) Find $\alpha \circ \beta$ and $\alpha \circ \alpha$.

   (b) Find $\mathrm{Dom}(\alpha)$ and $\mathrm{Dom}(\beta)$.

   (c) Find $\mathrm{Dom}(\alpha \circ \beta)$

9. [10 pts.] Let $W(x) = \left[\dfrac{12}{(x - 7)^5} \right]^8$. Find functions f, g and h such that $f \circ g \circ h = W$.

10. [10 pts.] Show the function $z(x) = x^2 + 4x - 21$ is *not* one-to-one.

11. [15 pts. each] Each function f below is one-to-one. Find the inverse f^{-1} of each function, and state the domain and range of both f and f^{-1}.

    (a) $f(x) = x^3 - 7$

    (b) $f(x) = \dfrac{x - 4}{x + 5}$