1. $a(x) \parallel b(x)$

2. $a(x) \perp j(x)$

3. $a(x)$ neither $f(x)$

4. $b(x) \perp j(x)$

5. $b(x)$ neither $f(x)$

6. $j(x)$ neither $f(x)$

7.
Line a: $m = 2$
Line b: $m = -\frac{2}{4} = -\frac{1}{2}$
$a \perp b$

8.
Line a: $m = -\frac{5}{6}$, $b = \frac{1}{3}$
Line b: $m = -\frac{5}{6}$, $b = \frac{3}{4}$
$a \parallel b$

9.
Line a and Line b have the same slope.
Write both in slope intercept form.
Line a: $y - 2 = -\frac{1}{2}x + 2$

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

Line b:
$y - 3 = -\frac{1}{2}(x - 2)$
$y - 3 = -\frac{1}{2}x + 1$

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

Neither, both equations represent the same line.

10.
Line a and Line b have the same slope.
The lines share the x-coordinate, but not the y-coordinate.
$a \parallel b$

11.
Line a is vertical and line b is horizontal.
$a \perp b$

12.

$m = -\frac{6}{3} = -2 \;||\; m = -2$

$(-1, -1)$

$y + 1 = -2(x + 1)$

$y + 1 = -2x - 2$

$2x + y = -3$

13.

$m = \frac{2}{3} \;||\; m = \frac{2}{3}$

$(-2, 4)$

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

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

$y = \frac{2}{3}x + \frac{16}{3}$

14.

$m = \frac{4}{5} \perp m = -\frac{5}{4}$

$(9, 2)$

$y - 2 = -\frac{5}{4}(x - 9)$

$y - 2 = -\frac{5}{4}x + \frac{45}{4}$

$y = -\frac{5}{4}x + \frac{45}{4} + 2$

$y = -\frac{5}{4}x + \frac{45}{4} + \frac{8}{4}$

$y = -\frac{5}{4}x + \frac{53}{4}$

standard form: $5x + 4y = 53$

15.

The perpendicular slope should be $\frac{1}{3}$. The student changed the sign but did not use the reciprocal.

$m = -3 \perp m = \frac{1}{3}$

$(-4, 1)$

$y - 1 = \frac{1}{3}(x - (-4))$

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

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

$y = \frac{1}{3}x + \frac{7}{3}$