1. \( \frac{\ln(\log_{10}(2))}{10} \)

2. (a) \( e^{x^2 + 1} \cdot 2x \)  
   (b) \( \frac{1}{\sqrt{1 - (10^x)^2}} \cdot 10^x \cdot (\ln(10)) \)  
   (c) \( \left( \frac{\sin(x)}{x} + \cos(x) \cdot \ln(x) \right) \cdot (x \sin(x)) \)

3. Partial answer: the angle between the vectors should be more than 90°.

4. \( \sqrt{50} \)

5. \( \frac{x-3}{4} = \frac{y+2}{4} = \frac{z-1}{6} \)

6. D

7. reflect across the line \( y = x \).

8. C

9. \( < -13, -7, 3 > \cdot < x - 2, y, z > = 0 \)

10. (a) True  
    (b) True  
    (c) False  
    (d) False  
    (e) False  
    (f) False  
    (g) True  
    (h) True

11. \( \frac{1}{2} \ln |r^2 - 5| + C \)

12. See p. 465, or start with \( \tan(\arctan(x)) = x \), differentiate, solve for \( \arctan'(x) \), and draw a triangle to substitute \( x^2 + 1 \) for \( \sec^2(\arctan(x)) \).

13. See p. 453

14. The line of intersection is perpendicular to both normal vectors, so a direction vector for the line can be obtained by taking the cross product of the two normal vectors.