**ANSWERS:**

1. a) $x - (2 - 2y + y^2)^{1/4} = 0$
   b) $(x^2 + 4)^{1/2} - 2y = 0$.
   c) $x^2/16 + y^2/9 = 1$.

2. a) $x = 1$.
   b) $27x + 4y = -73$.
   c) $x + 3y = -1$.

3. $e^2 + 1$.

4. a) $(t\cos(t^3), t\sin(t^3))$.
   b) $x\sin((x^2 + y^2)^{3/2}) - y\cos((x^2 + y^2)^{3/2}) = 0$.

5. a) $\mathbf{B} = 1/3\,\mathbf{A} + 1/3\,(2, 4, -5)$.
   b) $\mathbf{B} = 11/25\,\mathbf{A} + 1/25\,(92, 69, 25)$.
   c) $\mathbf{B} = -1/3\,\mathbf{A} + 1/3\,(11, 8, 7)$.

6. Only in Case c) are **v** and **w** perpendicular.

7. a) 2/3.
   b) $(13)^{1/2}/7$.

8. a) $2x + y - z = 2$.
   b) $x + y - z = 3$.
   c) $x - y = -1$.

9. 6/7.

10. $t \to (t, t, t)$ or $t \to (-t, -t, -t)$.

11. a) Yes. b) No. c) Yes. The answer is yes if there is a constant, non-zero vector which is orthogonal to **v** at each time t. Otherwise, the answer is no. For a), consider (-1, 0, 5) and for c), consider (0, 7, 1). No such vector exists for b) since in this case, $\mathbf{v}(0) = (0, 0, 1)$ and so such a vector would have to lie in the x-y plane. But then it couldn't be simultaneously orthogonal to $\mathbf{v}(\pi/2)$ and $\mathbf{v}(-\pi/2)$.

12. a) In the first case, $L = 20x + y - z - 9$. In the second, $L = 20x - y + 3z - 7$.
    b) In the first case, $L = z$. In the second, $L = 3y + z$.