1. $(6\sqrt{3}, 8\sqrt{3}, 15)$ and $(-6\sqrt{3}, -8\sqrt{3}, 15)$

2. $7x - y + 4z = 4$

3. $(1, 2, 5)$

4. (a) $D = \{(x, y) : -2 \leq x \leq 2 \text{ and } y > 3 \text{ or } y < -3\}$
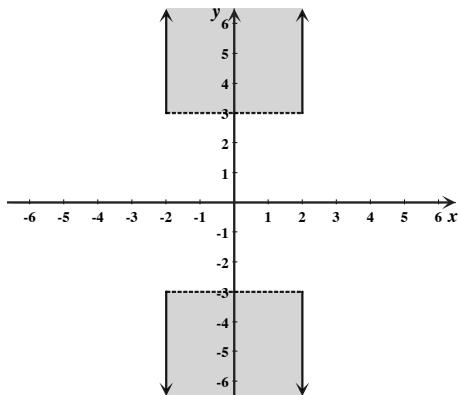
(b) $dz = -\frac{1}{32}$

5. $\dfrac{1}{12}\left(e^8 - 1\right)$

6. $\dfrac{6\pi + 8}{3}$

7. (a) $(27, 3)$ is a saddle point

(b) $z = 36 - (x - 10) + 2(y - 2)$

8. (a) $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n + 1)!} x^{2n+3}$

(b) $\displaystyle\sum_{n=0}^{\infty} \frac{(-1)^n}{(2n + 1)!(2n + 4)} x^{2n+4}$

(c) $T_6(x) = \dfrac{1}{4}x^4 - \dfrac{1}{36}x^6$

9. (a) $T_2(x) = 27 + \dfrac{136}{5}(x - 3) + \dfrac{449}{50}(x - 3)^2$

(b) $|T_2(x) - f(x)| \leq \dfrac{1}{6} \cdot \dfrac{164}{27} \cdot 8$

(c) At $x = 3$, the error is 0.