QUIZ 3 - ANSWER KEY

1. **a**. Disk method: $\pi\int_0^2 (x^2)^2 dx = \frac{32}{5}\pi$

b. Shell method: $2\pi\int_0^4 y(2-\sqrt{y})dy = \frac{32}{5}\pi$

2. **a**. Washer method: $\pi\int_0^2 ((2x)^2 - (x^2)^2)dx = \frac{64}{15}\pi$

b. Shell method: $2\pi\int_0^4 y(\sqrt{y} - \frac{y}{2})dy = \frac{64}{15}\pi$

3. **a**. Washer method: $\pi\int_0^4 \left((\sqrt{y})^2 - \left(\frac{y}{2}\right)^2\right)dy = \frac{8}{3}\pi$

b. Shell method: $2\pi\int_0^2 x(2x - x^2)dx = \frac{8}{3}\pi$

4. **a**. Washer method: $\pi\int_0^4 \left((2)^2 - \left(\frac{y}{2}\right)^2\right)dy = \frac{32}{3}\pi$

b. Shell method: $2\pi\int_0^2 (2-x)(4-2x)dx = \frac{32}{3}\pi$

5. **a**. Washer method: $\pi\int_0^2 ((4-x^2)^2 - (4-2x)^2)dx = \frac{32}{5}\pi$

b. Shell method: $2\pi\int_0^4 (4-y)(\sqrt{y} - \frac{y}{2})dy = \frac{32}{5}\pi$