

Math 250B X01 Test Three

Time: 50 minutes

Total: 16 marks

Name: _____

1. [3 marks] Find the work done by $\mathbf{F} = [y^2, x^3]$ along the part of $y = x^4$ from $(0, 0)$ to $(2, 16)$.

2. [4 marks] Find the surface area of the part of $z = 43 - x^2 - y^2$ that lies above $z = 7$.

3. [4 marks] R is bounded by: $2x+y = 2$, $2x+y = 4$, $y-3x = 0$, $y-3x = 1$.
Evaluate $\iint_R \frac{(2x+y)^2}{4+y-3x} dA$.

4. [5 marks] Use **spherical coordinates** to calculate the volume bounded by $z = 2\sqrt{x^2 + y^2}$ and $z = 4$.