Basic Related Rates Review

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| 1. | Air is being pumped into a spherical balloon so that its volume increases at a rate of 100cm3/s. How fast is the radius of the balloon increasing when the diameter is 50cm? | 2. | A ladder 10m long rests against a vertical wall. If the bottom of the ladder slides away from the wall at a rate of 1m/s, how fast is the top of the ladder sliding down the wall when the bottom of the ladder is 6m from the wall? |
| 3. | A water tank has the shape of an inverted cone with base radius 2m and height 4m. If water is being pumped into the tank at a rate if 2m3/min, find the rate at which the water level is rising when the tank is 3m deep. | 4. | Car A is traveling west at 50km/h and car B is traveling north at 60km/h. Both cars are headed for the intersection of the two roads. At what rate are the two cars approaching each other when car A is 300m and car B is 400m from the intersection? |
| 5. | Sven, who is 1.6 m tall, walks away from the base of a 4.5 m high lamppost at a rate of 1.2 m/s. At what rate is the length of his shadow increasing when he is 6m from the lamppost? | 6. | The sides of a cube are increasing at a rate of 1cm/s. How fast is the diagonal of the cube changing when the side length is 1cm? |