Question #24
Key: E

$\pi(\theta|1) \propto \theta(1.5\theta^{.5}) \propto \theta^{1.5}$. The required constant is the reciprocal of $\int_0^1 \theta^{1.5} d\theta = \theta^{2.5}/2.5\Big|_0^1 = .4$ and so $\pi(\theta|1) = 2.5\theta^{1.5}$. The requested probability is

$$\Pr(\theta > .6|1) = \int_{.6}^1 2.5\theta^{1.5} d\theta = \theta^{2.5}\Big|_{.6}^1 = 1 - .6^{2.5} = .721.$$