**Pre-test 1: Coulomb’s Law and Curly-r**

Using the (standard) notation of Griffiths (see his Fig 2.3 in section 2.1.3): On each of the diagrams below, identify the labeled vectors (A, B, and C) with either$ \vec{r}$, $\vec{r}'$ and **.

NOTE that you may choose more than one of these for any given vector!

1. **Disk** (radius a) of uniform surface charge density B. **Ring** (radius a) with uniform line charge density

P

A

B

C

P

A

B

C

 a a

C. **Solid** (radius a) sphere with uniform volume D. Point charge at the origin

 charge density

P

A

B

P

A

B

C

 a

 E. Point charge at an arbitrary location

P

A

B

C

Match each of the diagrams above (A-E) with the correct formula for the magnitude of **. Note that there may be more than one correct form, select ALL that are appropriate for a given diagram. (Here, θ’ is measured from the z-axis)

1$ =\sqrt{x^{2}+y^{2}+z^{2}}=r$ 4 $=\sqrt{r^{2}+a^{2}-2racos⁡(θ')}$

2  $=\sqrt{\left(x-x^{'}\right)^{2}+(y-y')^{2}+(z-z')^{2}}$ 5  $=\sqrt{r^{2}+r^{'}^{2}}$

3  $=\sqrt{r^{2}+r'^{2}-2rr'cos⁡(θ')}$ 6  $=\sqrt{r^{2}+a^{2}}$