Coordinate Systems- Supplement Solution Set

See If You Need This Video!

1. Answer: D.
   Please be careful with the sign.
   ≪ One-dimensional coordinate system≫
   Cantonese: 0:10 English: 0:05 Putonghua: 0:10

2. Answer: A.
   It is a one-dimensional coordinate system because all the points included can be labelled with one parameter.

   ≪One-dimensional coordinate system≫
   Cantonese: 0:10 English: 0:05 Putonghua: 0:10

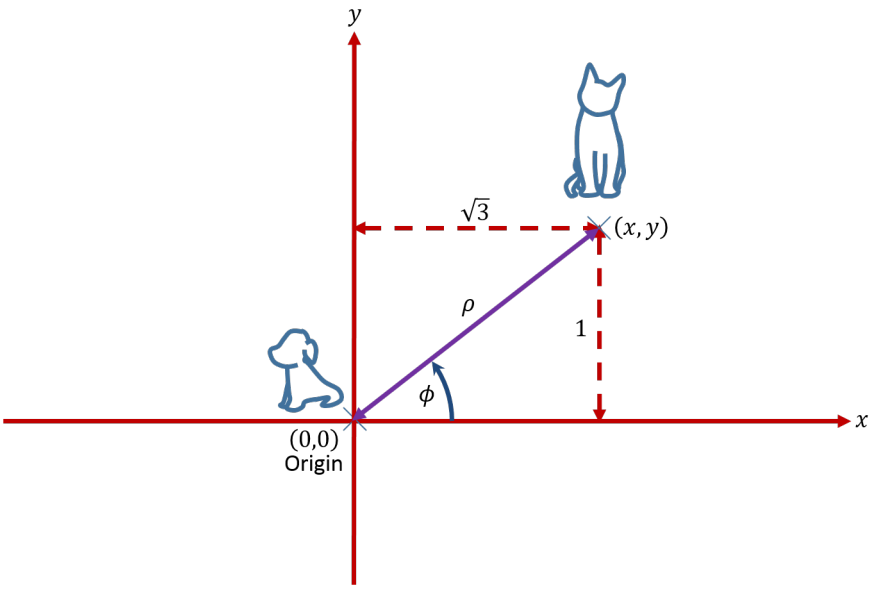
3. Answer: C.
   We need n number to describe a point in $n-$dimensional system.

   ≪Dimension of coordinate systems≫
   Cantonese: 1:20 English: 1:29 Putonghua: 1:21

4. Answer: D.
   The x-coordinate of the cat is $\sqrt{3}$.
   The y-coordinate of the cat is 1.

   ≪Two-dimensional coordinate system≫
   Cantonese: 1:20 English: 1:29 Putonghua: 1:21

5. Answer: C.
We usually use radian instead degree when we write an angle

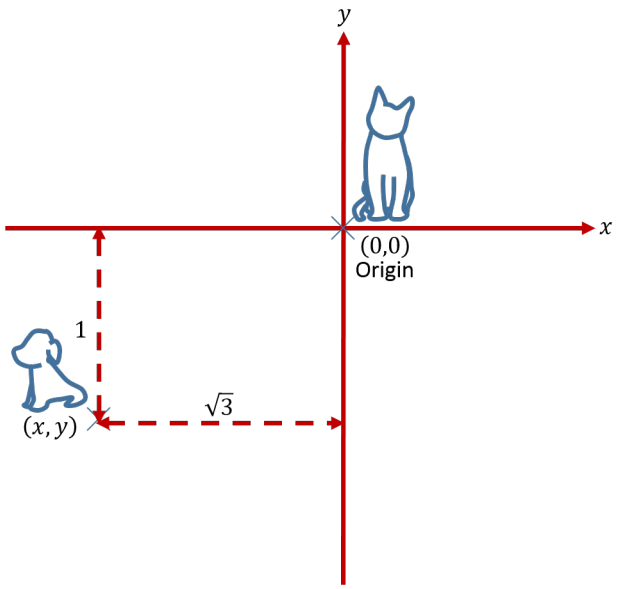


$$\rho = \sqrt{x^2 + y^2}$$
$$\phi = \tan^{-1}\left(1/\sqrt{3}\right)$$

With $\phi < \pi/2$, we have answer C.

≪Polar coordinate system≫
Cantonese: 2:09 English: 2:13 Putonghua: 2:18

6. Answer: E.



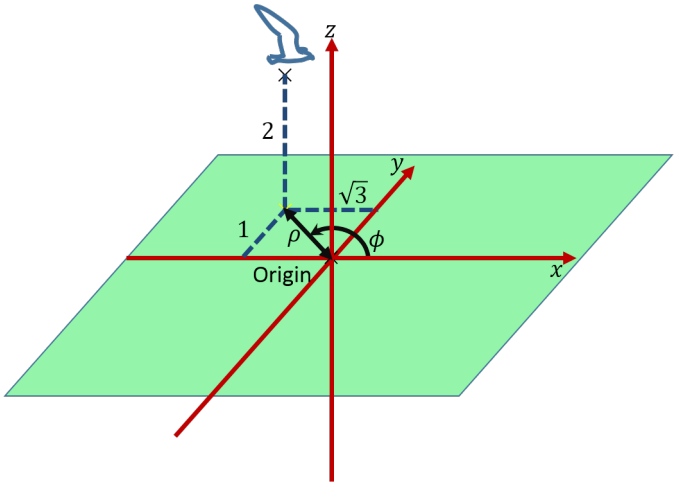
Please be careful with the signs.

≪Reference frames≫
Cantonese: 0:40 English: 0:43 Putonghua: 0:40

7. Answer: B.
Please be careful with the signs.

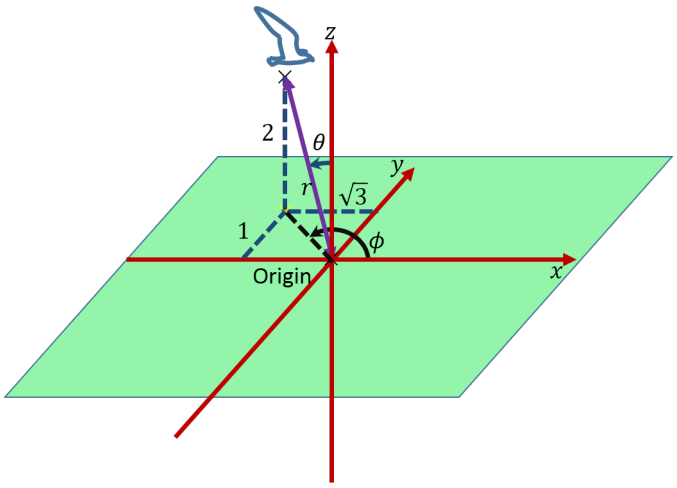
≪Three-dimensional coordinate system≫
Cantonese: 3:07 English: 3:26 Putonghua: 3:20

8. Answer: D.



≪Cylindrical coordinate system≫
Cantonese: 3:54 English: 4:06 Putonghua: 4:11

9. Answer: C.



≪Spherical coordinate system≫
Cantonese: 4:50 English: 5:11 Putonghua: 5:16

10. Answer: A.
    By the conversion.

$$x = r\sin\theta\cos\phi$$
$$y = r\sin\theta\sin\phi$$
$$z = r\cos\theta$$

    ≪Conversion between spherical and Cartesian coordinate system≫
    Cantonese: 5:40 English: 5:53 Putonghua: 5:59