CS 371 – Extra Review Problems on Conversion from World (Model) to View to Projection Coordinates

The next two problems are like the two from your previous review problem sets. What happens to the point $P = (6, -14, -19)$ as it travels down the pipeline from its present state in world coordinates to view coordinates and finally to perspective projection coordinates?

The world-to-view transformation is determined by:

```
lookAt(vec3(-4, 16, -8), vec3(6, 16, -8), vec3(0, 0, -1))
```

The projection transformation is determined by:

```
perspective(170.0, 1.0, 5, 25);
```

1. What are the view coordinates of the point P?
   Answer (-30, 11, -10)
2. What are the (x_p, y_p) projection coordinates of the point P?
   Answer (-15, 5.5)

And two more – just in case you feel you need a bit more practice. What happens to the point $P = (-16, 18, 9)$ as it travels down the pipeline from its present state in world coordinates to view coordinates and finally to perspective projection coordinates?

The world-to-view transformation is determined by:

```
lookAt(vec3(-14, 10, 5), vec3(-14, -10, 5), vec3(-1, 0, 0))
```

The projection transformation is determined by:

```
perspective(170.0, 1.0, 2, 10);
```

3. What are the view coordinates of the point P?
   Answer (-4, 2, 8) (Note: Since z is positive, this point has no chance of being visible.)
4. What are the (x_p, y_p) projection coordinates of the point P?
   Answer (-1.0, 0.5)