Activity 9 Applied component vectors
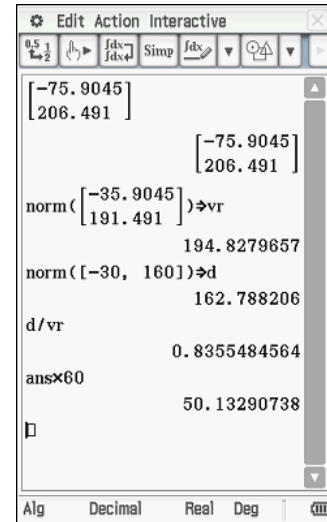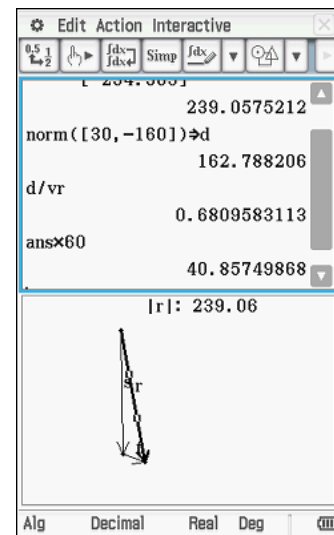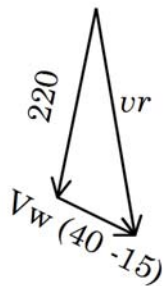
1.

a) Plane velocity ~–75.90**i**+206.5**j** km/h

b) Distance ~162.8 km
Resultant speed ~194.8 km/h
Time taken ~50 minutes

```
┌ -75.9045 ┐
└ 206.491  ┘
                    ┌ -75.9045 ┐
                    └ 206.491  ┘
norm( ┌ -35.9045 ┐ )⇒vr
      └ 191.491  ┘
                    194.8279657
norm([-30, 160])⇒d
                    162.788206
d/vr
                    0.8355484564
ans×60
                    50.13290738
```

c) Pilot should set velocity vector of
~4.1**i**–220**j** km/h

Distance ~162.8 km
Resultant Speed ~239.1 km/h
Time taken ~41 minutes


```
              239.0575212
norm([30,-160])⇒d
              162.788206
d/vr
              0.6809583113
ans×60
              40.85749868
         |r|: 239.06
```

2. Resultant force is ≈166.3N at an angle of ~150.8° anticlockwise from the positive *x*–axis.

```
[300,∠(30)]⇒a
          [259.8076211 150]
[290,∠(120)]⇒b
          [-145 251.1473671]
[-260,0]⇒c
          [-260 0]
[0,-320]⇒d
          [0 -320]
a+b+c+d
 [-145.1923789 81.1473671]
toPol(ans)
[166.3301598 ∠(150.79937▶
```