Subject: Approximate distance calculation
Posted by mirek on Sat, 26 Aug 2017 07:55:49 GMT
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While working on OSD firmware for my FPV plane, I have started playing with the idea how to calculate fast distance approximation:

```
int ihypot(int x, int y)
{
 if(x < 0)
  x = -x;
 if(y < 0)
  y = -y;
 if(x < y)
  Swap(x, y);
 if(y < (x >> 2) + (x >> 3))
  return x + (y >> 3) + (y >> 5);
 y -= (x >> 2) + (x >> 5);
 return x + (y >> 1) + (y >> 4);
}
```

This is approximation of sqrt(x*x + y*y).

- if max(x, y) < 168, absolute error < 4 (this has more to do with integer rounding)
- otherwise, the error is less than 2%

Putting it here so that perhaps it can be googled if somebody is looking for something like it...