Task 1

GAN	FID	IS
Non-saturating GAN	**163.15**	**3.33**
Hinge Loss GAN	195.59	2.86

In terms of metrics Non-saturating GAN performs better than Hinge Loss GAN, because it has lower FID and higher IS.

Generated by GANs images are shown below. The first one is generated by Non-saturating GAN. It's easy to find flowers here, however, the quality of images can be better. The second image is generated by Hinge Loss GAN. It's really difficult to realize that there are flowers. To sum up, Non-saturating GAN also performs better than Hinge Loss GAN in terms of generated images.

Task 2

GAN	FID	IS
Conditional Hinge Loss GAN	**146.47**	**2.92**
Hinge Loss GAN	195.59	2.86

In terms of metrics Conditional Hinge Loss GAN performs better than Hinge Loss GAN, because it has lower FID and higher IS.

Generated by GANs images are shown below. The first one is generated by Conditional Hinge Loss GAN. Some flowers can be detected, but it's often difficult to call it "flowers". The second image is generated by Hinge Loss GAN. It's really difficult to realize that there are flowers.
To sum up, Conditional Hinge Loss GAN also performs better than Hinge Loss GAN in terms of generated images.

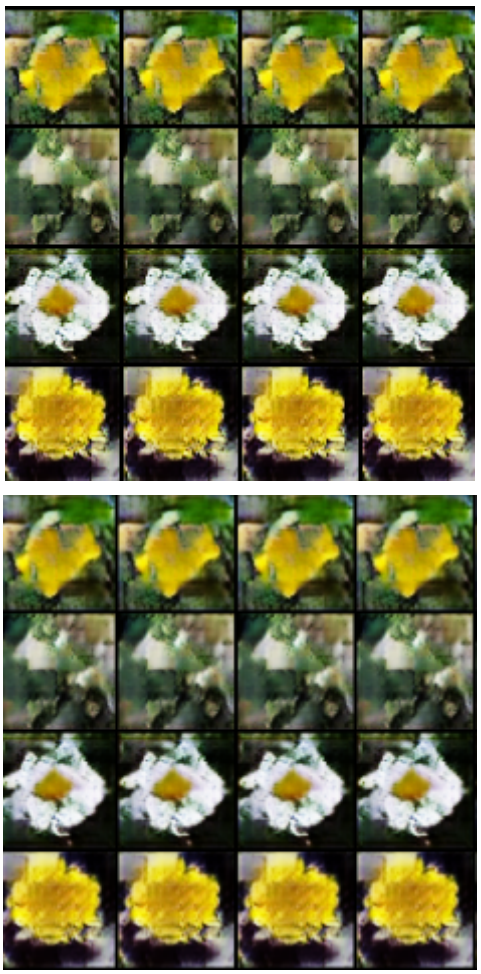
Conditional version performs better, because we use embeddings of labels additionally to a generator input noise. It also allows us to use adaptive batch normalization instead of standard one.

Task 3

Conditional Hinge Loss GAN	**FID**	**IS**
Without Truncation Trick	**146.47**	**2.92**
With Truncation Trick	153.09	2.87

Using truncation trick gives us worse performance (higher FID and lower IS). But truncation trick image seems to be a little bit smoother, not to have some black random pixels and,

finally, it seems to look better from the visual point of view. The generated images are shown below. The first one is generated without a truncation trick. The second one is generated with a truncation trick.



A truncation trick works this way, because, may be, the lower range - the less number of possible sampled values. Then the generator output of close input values seems to be closer, and that's why the obtained image seems to be smoother and visually better.

Full generated images are shown below.